

WEBVTT

NOTE duration:"00:59:44"

NOTE recognizability:0.792

NOTE language:en-us

NOTE Confidence: 0.913976084

00:00:00.000 --> 00:00:01.660 Alright, I think we are.

NOTE Confidence: 0.885737194

00:00:04.450 --> 00:00:06.160 Being recorded, folks are joining.

NOTE Confidence: 0.66993997

00:00:08.510 --> 00:00:11.989 As in good spirits of prior to

NOTE Confidence: 0.66993997

00:00:11.990 --> 00:00:13.700 zoom conferences, I see people

NOTE Confidence: 0.66993997

00:00:13.700 --> 00:00:15.140 having lunch, which is wonderful.

NOTE Confidence: 0.47395997

00:00:17.730 --> 00:00:18.270 That's great.

NOTE Confidence: 0.903083468571429

00:00:21.230 --> 00:00:22.950 Let's see, I am on my phone, Eric,

NOTE Confidence: 0.903083468571429

00:00:22.950 --> 00:00:25.470 so I can't tell how many people have joined.

NOTE Confidence: 0.903083468571429

00:00:25.470 --> 00:00:27.322 We're up to 40.

NOTE Confidence: 0.903083468571429

00:00:27.322 --> 00:00:30.878 Looks like alright, perfect, great,

NOTE Confidence: 0.903083468571429

00:00:30.878 --> 00:00:33.710 and so good afternoon everyone.

NOTE Confidence: 0.903083468571429

00:00:33.710 --> 00:00:36.655 My name is Andres in truck and I

NOTE Confidence: 0.903083468571429

00:00:36.655 --> 00:00:38.785 just wanted to welcome everyone back

NOTE Confidence: 0.903083468571429

00:00:38.790 --> 00:00:43.698 to another edition of the joint  
NOTE Confidence: 0.903083468571429

00:00:43.700 --> 00:00:46.783 Northeastern I should call it sleep  
NOTE Confidence: 0.903083468571429

00:00:46.783 --> 00:00:50.648 conferences now that includes several  
NOTE Confidence: 0.903083468571429

00:00:50.648 --> 00:00:54.111 different academic programs and we're  
NOTE Confidence: 0.903083468571429

00:00:54.111 --> 00:00:56.337 really excited to have you back.  
NOTE Confidence: 0.903083468571429

00:00:56.340 --> 00:00:58.741 And joining us today and we have  
NOTE Confidence: 0.903083468571429

00:00:58.741 --> 00:01:01.244 a very special speaker with us  
NOTE Confidence: 0.903083468571429

00:01:01.244 --> 00:01:03.454 today that Eric will introduce.  
NOTE Confidence: 0.903083468571429

00:01:03.460 --> 00:01:05.626 And just to remind you that  
NOTE Confidence: 0.903083468571429

00:01:05.626 --> 00:01:06.348 during conference,  
NOTE Confidence: 0.903083468571429

00:01:06.350 --> 00:01:11.084 please keep your mikes muted and post your  
NOTE Confidence: 0.903083468571429

00:01:11.084 --> 00:01:15.848 questions into the chat and we will have.  
NOTE Confidence: 0.903083468571429

00:01:15.850 --> 00:01:18.940 Our panel answer questions and Eric  
NOTE Confidence: 0.903083468571429

00:01:18.940 --> 00:01:22.998 will guide that at the end of the talk.  
NOTE Confidence: 0.903083468571429

00:01:23.000 --> 00:01:24.944 If you wanted to receive CME  
NOTE Confidence: 0.903083468571429

00:01:24.944 --> 00:01:26.516 for today's activity, you can.

NOTE Confidence: 0.903083468571429  
00:01:26.516 --> 00:01:28.900 You just have to be registered with the  
NOTE Confidence: 0.903083468571429  
00:01:28.969 --> 00:01:34.208 LC ME and the code to put into the CME.  
NOTE Confidence: 0.3521384  
00:01:38.070 --> 00:01:40.714 App is going to be posted in the  
NOTE Confidence: 0.3521384  
00:01:40.714 --> 00:01:42.950 chat as well by Debbie Lovejoy,  
NOTE Confidence: 0.3521384  
00:01:42.950 --> 00:01:45.182 and so thank you all again for joining us.  
NOTE Confidence: 0.3521384  
00:01:45.190 --> 00:01:46.762 I'm going to hand it over  
NOTE Confidence: 0.3521384  
00:01:46.762 --> 00:01:48.100 to Eric to introduce him.  
NOTE Confidence: 0.832215262222222  
00:01:50.110 --> 00:01:51.202 Wonderful good afternoon.  
NOTE Confidence: 0.832215262222222  
00:01:51.202 --> 00:01:53.386 Everyone had the pleasure of introducing,  
NOTE Confidence: 0.832215262222222  
00:01:53.390 --> 00:01:57.170 you know dialogic today who.  
NOTE Confidence: 0.832215262222222  
00:01:57.170 --> 00:01:59.222 It did her medical training at  
NOTE Confidence: 0.832215262222222  
00:01:59.222 --> 00:02:00.980 Georg August University in Germany  
NOTE Confidence: 0.832215262222222  
00:02:00.980 --> 00:02:03.000 and something I did not realize  
NOTE Confidence: 0.832215262222222  
00:02:03.000 --> 00:02:05.193 is that she actually did pediatric  
NOTE Confidence: 0.832215262222222  
00:02:05.193 --> 00:02:07.803 training first at Carl Gustav Carus  
NOTE Confidence: 0.832215262222222

00:02:07.803 --> 00:02:09.976 University in Dresden before coming  
NOTE Confidence: 0.8322152622222222

00:02:09.976 --> 00:02:12.358 to the US and pursuing neurology  
NOTE Confidence: 0.8322152622222222

00:02:12.358 --> 00:02:14.420 training being both a resident chief  
NOTE Confidence: 0.8322152622222222

00:02:14.420 --> 00:02:16.080 resident at Dartmouth Hitchcock and  
NOTE Confidence: 0.8322152622222222

00:02:16.135 --> 00:02:17.767 then undergoing Sleep Medicine,  
NOTE Confidence: 0.8322152622222222

00:02:17.770 --> 00:02:20.770 clinical training at Brigham and Women's.  
NOTE Confidence: 0.8322152622222222

00:02:20.770 --> 00:02:22.054 And since then,  
NOTE Confidence: 0.8322152622222222

00:02:22.054 --> 00:02:24.622 she's maintained an active clinical practice,  
NOTE Confidence: 0.8322152622222222

00:02:24.630 --> 00:02:26.568 first at Brigham and Women's Hospital,  
NOTE Confidence: 0.8322152622222222

00:02:26.570 --> 00:02:28.370 and more recently at Beth  
NOTE Confidence: 0.8322152622222222

00:02:28.370 --> 00:02:29.810 Israel Deaconess Medical Center,  
NOTE Confidence: 0.8322152622222222

00:02:29.810 --> 00:02:33.423 where she's risen to the to be assistant  
NOTE Confidence: 0.8322152622222222

00:02:33.423 --> 00:02:35.278 professor in neurology at Harvard  
NOTE Confidence: 0.8322152622222222

00:02:35.278 --> 00:02:37.952 Medical School and has had active  
NOTE Confidence: 0.8322152622222222

00:02:37.952 --> 00:02:39.884 involvement Precepting Fleet Fellows,  
NOTE Confidence: 0.8322152622222222

00:02:39.890 --> 00:02:41.922 which is greatly appreciated

NOTE Confidence: 0.832215262222222  
00:02:41.922 --> 00:02:43.446 for both fellowships.  
NOTE Confidence: 0.832215262222222  
00:02:43.450 --> 00:02:44.970 She's also had leadership roles,  
NOTE Confidence: 0.832215262222222  
00:02:44.970 --> 00:02:46.985 including being a medical director  
NOTE Confidence: 0.832215262222222  
00:02:46.985 --> 00:02:49.417 during her time at the clinic  
NOTE Confidence: 0.832215262222222  
00:02:49.417 --> 00:02:51.475 at the at at Brigham Women.  
NOTE Confidence: 0.832215262222222  
00:02:51.480 --> 00:02:55.323 And she is a ad hoc reviewer for many  
NOTE Confidence: 0.832215262222222  
00:02:55.323 --> 00:02:59.280 different journals and has also had a  
NOTE Confidence: 0.832215262222222  
00:02:59.280 --> 00:03:03.019 series of funded research projects early on.  
NOTE Confidence: 0.832215262222222  
00:03:03.020 --> 00:03:05.616 Having a relationship with  
NOTE Confidence: 0.832215262222222  
00:03:05.616 --> 00:03:09.510 Roberts trickled in his lab and.  
NOTE Confidence: 0.832215262222222  
00:03:09.510 --> 00:03:11.360 And having many projects in  
NOTE Confidence: 0.832215262222222  
00:03:11.360 --> 00:03:13.210 the areas of sleep learning,  
NOTE Confidence: 0.832215262222222  
00:03:13.210 --> 00:03:14.346 memory consolidation,  
NOTE Confidence: 0.832215262222222  
00:03:14.346 --> 00:03:17.186 EG analysis and cognitive decline,  
NOTE Confidence: 0.832215262222222  
00:03:17.190 --> 00:03:18.890 including its relationships with  
NOTE Confidence: 0.832215262222222

00:03:18.890 --> 00:03:20.590 Parkinson's disease and Alzheimer's  
NOTE Confidence: 0.832215262222222

00:03:20.590 --> 00:03:22.470 and that's generated over 20  
NOTE Confidence: 0.832215262222222

00:03:22.470 --> 00:03:24.350 publications and makes her very  
NOTE Confidence: 0.832215262222222

00:03:24.414 --> 00:03:26.822 well qualified to speak on the topic  
NOTE Confidence: 0.832215262222222

00:03:26.822 --> 00:03:28.988 that she's joining us for today for.  
NOTE Confidence: 0.832215262222222

00:03:28.990 --> 00:03:31.114 So thank you very much for taking the time.  
NOTE Confidence: 0.692143733333333

00:03:32.160 --> 00:03:34.650 Thanks, Eric. Thanks for having me.  
NOTE Confidence: 0.692143733333333

00:03:34.650 --> 00:03:39.830 So I'm going to dive right in second.  
NOTE Confidence: 0.692143733333333

00:03:39.830 --> 00:03:46.048 OK. So I. I like to start with a  
NOTE Confidence: 0.692143733333333

00:03:46.048 --> 00:03:48.750 little bit of a historic background.  
NOTE Confidence: 0.692143733333333

00:03:48.750 --> 00:03:53.630 There was a book that actually put together  
NOTE Confidence: 0.692143733333333

00:03:53.630 --> 00:03:57.711 many famous people and how much they  
NOTE Confidence: 0.692143733333333

00:03:57.711 --> 00:04:00.630 presumably step because there is still  
NOTE Confidence: 0.692143733333333

00:04:00.630 --> 00:04:02.660 this notion that if you're a genius,  
NOTE Confidence: 0.692143733333333

00:04:02.660 --> 00:04:05.920 whether you're a writer, painter,  
NOTE Confidence: 0.692143733333333

00:04:05.920 --> 00:04:08.720 composer, you can live on very little

NOTE Confidence: 0.6921437333333333  
00:04:08.720 --> 00:04:11.700 sleep and that really disproved that.  
NOTE Confidence: 0.6921437333333333  
00:04:11.700 --> 00:04:14.820 So it shows that most famous.  
NOTE Confidence: 0.6921437333333333  
00:04:14.820 --> 00:04:16.695 And productive and prolific people  
NOTE Confidence: 0.6921437333333333  
00:04:16.695 --> 00:04:19.186 in the past have actually slept more  
NOTE Confidence: 0.6921437333333333  
00:04:19.186 --> 00:04:21.755 than we thought they did or got a good  
NOTE Confidence: 0.6921437333333333  
00:04:21.755 --> 00:04:23.890 eight hours of sleep or even more.  
NOTE Confidence: 0.365068225  
00:04:27.330 --> 00:04:33.700 This one. So the first publication  
NOTE Confidence: 0.365068225  
00:04:33.700 --> 00:04:37.564 on sleep and Memory was actually  
NOTE Confidence: 0.365068225  
00:04:37.564 --> 00:04:41.106 from Jenkins and Dallenbach in 1924.  
NOTE Confidence: 0.365068225  
00:04:41.106 --> 00:04:46.464 There was a person that had previously looked  
NOTE Confidence: 0.365068225  
00:04:46.464 --> 00:04:50.054 at nonsense syllables and they had taken it.  
NOTE Confidence: 0.365068225  
00:04:50.054 --> 00:04:52.830 They were taking it a little bit further.  
NOTE Confidence: 0.365068225  
00:04:52.830 --> 00:04:55.698 What is interesting is.  
NOTE Confidence: 0.365068225  
00:04:55.700 --> 00:04:58.199 That this was done 100 years ago,  
NOTE Confidence: 0.365068225  
00:04:58.200 --> 00:05:01.035 and at that time it was enough to use  
NOTE Confidence: 0.365068225

00:05:01.035 --> 00:05:04.464 just two students in each group, and so  
NOTE Confidence: 0.365068225

00:05:04.464 --> 00:05:07.476 they had them learn nonsense syllables.  
NOTE Confidence: 0.365068225

00:05:07.480 --> 00:05:12.998 And they had two students who were sleeping,  
NOTE Confidence: 0.365068225

00:05:12.998 --> 00:05:15.392 and who students who stayed awake  
NOTE Confidence: 0.365068225

00:05:15.392 --> 00:05:17.918 over this interval of eight hours.  
NOTE Confidence: 0.365068225

00:05:17.920 --> 00:05:22.670 And as you can see in the graph here,  
NOTE Confidence: 0.365068225

00:05:22.670 --> 00:05:24.969 the students who slept,  
NOTE Confidence: 0.365068225

00:05:24.969 --> 00:05:27.832 they were able to retain these syllables  
NOTE Confidence: 0.365068225

00:05:27.832 --> 00:05:32.386 a lot better than those who stayed awake.  
NOTE Confidence: 0.365068225

00:05:32.386 --> 00:05:38.460 And uhm. Then not much happened, Uhm?  
NOTE Confidence: 0.365068225

00:05:38.460 --> 00:05:40.430 Not meant that there wasn't  
NOTE Confidence: 0.365068225

00:05:40.430 --> 00:05:42.400 much research for many decades,  
NOTE Confidence: 0.365068225

00:05:42.400 --> 00:05:46.008 and I think that.  
NOTE Confidence: 0.365068225

00:05:46.010 --> 00:05:48.946 There were a couple of obstacles that  
NOTE Confidence: 0.365068225

00:05:48.946 --> 00:05:51.826 prevented people from really believing  
NOTE Confidence: 0.365068225

00:05:51.826 --> 00:05:55.549 that sleep was meaningful in in cognition,

NOTE Confidence: 0.365068225

00:05:55.550 --> 00:05:59.534 and one reason is listed on the left.

NOTE Confidence: 0.365068225

00:05:59.540 --> 00:06:02.500 If you look at how many hours of

NOTE Confidence: 0.365068225

00:06:02.500 --> 00:06:04.560 sleep different species require,

NOTE Confidence: 0.365068225

00:06:04.560 --> 00:06:08.568 you can see humans down here at #3.

NOTE Confidence: 0.365068225

00:06:08.570 --> 00:06:10.866 Only below are the cow in the wars

NOTE Confidence: 0.365068225

00:06:10.866 --> 00:06:13.446 here and many other animals are above,

NOTE Confidence: 0.365068225

00:06:13.450 --> 00:06:16.040 and so there's no clear correlation between.

NOTE Confidence: 0.365068225

00:06:16.040 --> 00:06:17.664 Among animals or mammals,

NOTE Confidence: 0.365068225

00:06:17.664 --> 00:06:20.100 how much sleep they are getting

NOTE Confidence: 0.365068225

00:06:20.176 --> 00:06:23.228 and their cognitive ability.

NOTE Confidence: 0.365068225

00:06:23.230 --> 00:06:25.600 Similarly.

NOTE Confidence: 0.365068225

00:06:25.600 --> 00:06:28.240 This is a publication from Jerry

NOTE Confidence: 0.365068225

00:06:28.240 --> 00:06:29.560 Siegel assigns publication,

NOTE Confidence: 0.365068225

00:06:29.560 --> 00:06:34.112 who showed the amount of REM sleep and

NOTE Confidence: 0.365068225

00:06:34.112 --> 00:06:37.481 relation to humans and on the left side you

NOTE Confidence: 0.365068225

00:06:37.481 --> 00:06:40.775 can see animals that have a lot of REM sleep,  
NOTE Confidence: 0.365068225

00:06:40.780 --> 00:06:44.320 which includes the platypus not considered  
NOTE Confidence: 0.365068225

00:06:44.320 --> 00:06:46.480 the smartest animal on the right,  
NOTE Confidence: 0.365068225

00:06:46.480 --> 00:06:49.120 you see a dolphins having  
NOTE Confidence: 0.365068225

00:06:49.120 --> 00:06:51.232 very little REM sleep,  
NOTE Confidence: 0.365068225

00:06:51.240 --> 00:06:53.235 and so there was this notion that  
NOTE Confidence: 0.365068225

00:06:53.235 --> 00:06:54.759 it doesn't really make sense.  
NOTE Confidence: 0.365068225

00:06:54.760 --> 00:06:55.848 There's no correlation about.  
NOTE Confidence: 0.365068225

00:06:55.848 --> 00:06:57.819 You know if if REM sleep or  
NOTE Confidence: 0.365068225

00:06:57.819 --> 00:06:58.947 sleep was that important,  
NOTE Confidence: 0.365068225

00:06:58.950 --> 00:07:01.128 it would really correlate with you  
NOTE Confidence: 0.365068225

00:07:01.128 --> 00:07:03.189 know humans should have the most  
NOTE Confidence: 0.365068225

00:07:03.189 --> 00:07:05.072 and so that really took a break  
NOTE Confidence: 0.365068225

00:07:05.072 --> 00:07:07.644 on a lot of research and I think  
NOTE Confidence: 0.365068225

00:07:07.644 --> 00:07:09.620 eventually we started to understand  
NOTE Confidence: 0.365068225

00:07:09.620 --> 00:07:13.602 a lot more about the way memories

NOTE Confidence: 0.365068225

00:07:13.602 --> 00:07:15.624 function and I'm just going.

NOTE Confidence: 0.365068225

00:07:15.624 --> 00:07:17.870 I should have said that at the beginning,

NOTE Confidence: 0.365068225

00:07:17.870 --> 00:07:20.336 I'm assuming that we're all that

NOTE Confidence: 0.365068225

00:07:20.336 --> 00:07:22.438 the audience has very different

NOTE Confidence: 0.365068225

00:07:22.438 --> 00:07:24.668 backgrounds in terms of neurology

NOTE Confidence: 0.365068225

00:07:24.668 --> 00:07:26.260 and condition and memories.

NOTE Confidence: 0.365068225

00:07:26.260 --> 00:07:29.089 So I'm I'm.

NOTE Confidence: 0.365068225

00:07:29.090 --> 00:07:32.402 Trying to be very very basic and and

NOTE Confidence: 0.365068225

00:07:32.402 --> 00:07:35.876 trying to give an overview so that

NOTE Confidence: 0.365068225

00:07:35.876 --> 00:07:37.998 hopefully everybody can understand.

NOTE Confidence: 0.8762909125

00:07:40.270 --> 00:07:46.462 2nd So this is. Altered a little bit,

NOTE Confidence: 0.8762909125

00:07:46.462 --> 00:07:50.111 but this is from a publication from 1968

NOTE Confidence: 0.8762909125

00:07:50.111 --> 00:07:52.679 and that's still more or less how we

NOTE Confidence: 0.8762909125

00:07:52.679 --> 00:07:55.449 look at other different memory systems.

NOTE Confidence: 0.8762909125

00:07:55.450 --> 00:07:57.586 So you start at the left.

NOTE Confidence: 0.8762909125

00:07:57.590 --> 00:08:00.029 You have a sensory input and that can be,  
NOTE Confidence: 0.8762909125

00:08:00.030 --> 00:08:02.710 for example learning a  
NOTE Confidence: 0.8762909125

00:08:02.710 --> 00:08:05.390 skill or reading something,  
NOTE Confidence: 0.8762909125

00:08:05.390 --> 00:08:07.148 and if you're not paying attention,  
NOTE Confidence: 0.8762909125

00:08:07.150 --> 00:08:10.410 that information is immediately lost.  
NOTE Confidence: 0.8762909125

00:08:10.410 --> 00:08:11.642 If you pay attention,  
NOTE Confidence: 0.8762909125

00:08:11.642 --> 00:08:13.490 and if it's important to you,  
NOTE Confidence: 0.8762909125

00:08:13.490 --> 00:08:14.720 it gets initially.  
NOTE Confidence: 0.8762909125

00:08:14.720 --> 00:08:17.845 Put into short term memory storage and  
NOTE Confidence: 0.8762909125

00:08:17.845 --> 00:08:23.040 again if it's not rehearsed or it it gets.  
NOTE Confidence: 0.8762909125

00:08:23.040 --> 00:08:25.440 Also it's in a label state.  
NOTE Confidence: 0.8762909125

00:08:25.440 --> 00:08:28.436 It has to be encoded and consolidated  
NOTE Confidence: 0.8762909125

00:08:28.436 --> 00:08:31.521 to then move into the long term  
NOTE Confidence: 0.8762909125

00:08:31.521 --> 00:08:34.610 memory storage which.  
NOTE Confidence: 0.8762909125

00:08:34.610 --> 00:08:36.110 Can also be lost overtime,  
NOTE Confidence: 0.8762909125

00:08:36.110 --> 00:08:37.715 but it's much more stable

NOTE Confidence: 0.8762909125

00:08:37.715 --> 00:08:38.999 and much more permanent.

NOTE Confidence: 0.928974675384615

00:08:43.570 --> 00:08:46.741 When we look at the different types

NOTE Confidence: 0.928974675384615

00:08:46.741 --> 00:08:49.318 of memories that we can study,

NOTE Confidence: 0.928974675384615

00:08:49.320 --> 00:08:53.432 we typically divide the long term memory in

NOTE Confidence: 0.928974675384615

00:08:53.432 --> 00:08:56.587 non declarative and declarative memories.

NOTE Confidence: 0.928974675384615

00:08:56.590 --> 00:08:59.572 So non declarative memories are the memories

NOTE Confidence: 0.928974675384615

00:08:59.572 --> 00:09:01.810 of procedural memories riding a bike,

NOTE Confidence: 0.928974675384615

00:09:01.810 --> 00:09:04.750 motor skills and motional memories.

NOTE Confidence: 0.928974675384615

00:09:04.750 --> 00:09:07.190 Declarative memories are subdivided into

NOTE Confidence: 0.928974675384615

00:09:07.190 --> 00:09:09.896 episodic and semantic memories, so those

NOTE Confidence: 0.928974675384615

00:09:09.896 --> 00:09:12.507 are the memories for facts and events.

NOTE Confidence: 0.928974675384615

00:09:12.510 --> 00:09:15.876 So what did I have for dinner last night?

NOTE Confidence: 0.928974675384615

00:09:15.880 --> 00:09:18.340 What is the capital of Paris?

NOTE Confidence: 0.928974675384615

00:09:18.340 --> 00:09:21.040 Those are all declarative memories,

NOTE Confidence: 0.928974675384615

00:09:21.040 --> 00:09:25.110 so we subgroup them. And.

NOTE Confidence: 0.928974675384615

00:09:25.110 --> 00:09:30.870 When we think about what is happening across  
NOTE Confidence: 0.928974675384615

00:09:30.870 --> 00:09:34.570 with sleep dependent memory consolidation,  
NOTE Confidence: 0.928974675384615

00:09:34.570 --> 00:09:37.996 we. Have initially he is an  
NOTE Confidence: 0.928974675384615

00:09:37.996 --> 00:09:41.340 example of the memory game on.  
NOTE Confidence: 0.928974675384615

00:09:41.340 --> 00:09:44.252 Yeah, I think you call it concentration  
NOTE Confidence: 0.928974675384615

00:09:44.252 --> 00:09:47.232 so the person is encoding and learning  
NOTE Confidence: 0.928974675384615

00:09:47.232 --> 00:09:49.578 where the cards are and during  
NOTE Confidence: 0.928974675384615

00:09:49.578 --> 00:09:52.325 that time the memory is temporarily  
NOTE Confidence: 0.928974675384615

00:09:52.325 --> 00:09:55.184 stored in the hippocampus and then  
NOTE Confidence: 0.928974675384615

00:09:55.184 --> 00:09:57.619 there is a consolidation process  
NOTE Confidence: 0.928974675384615

00:09:57.619 --> 00:10:00.680 during which the memory is changed.  
NOTE Confidence: 0.928974675384615

00:10:00.680 --> 00:10:03.822 There is, you know,  
NOTE Confidence: 0.928974675384615

00:10:03.822 --> 00:10:05.910 synaptic downscaling there.  
NOTE Confidence: 0.928974675384615

00:10:05.910 --> 00:10:08.878 Is the memory is moved into more  
NOTE Confidence: 0.928974675384615

00:10:08.878 --> 00:10:11.903 the cortex in different areas and  
NOTE Confidence: 0.928974675384615

00:10:11.903 --> 00:10:14.730 it becomes a more permanent trace

NOTE Confidence: 0.928974675384615  
00:10:14.730 --> 00:10:17.310 and then there is the retrieval  
NOTE Confidence: 0.928974675384615  
00:10:17.392 --> 00:10:19.780 process which is our ability to  
NOTE Confidence: 0.928974675384615  
00:10:19.780 --> 00:10:22.569 have access to the stored memory.  
NOTE Confidence: 0.945879971  
00:10:25.040 --> 00:10:27.425 And we think that the  
NOTE Confidence: 0.945879971  
00:10:27.425 --> 00:10:29.333 consolidation process can take  
NOTE Confidence: 0.945879971  
00:10:29.333 --> 00:10:30.904 place during wakefulness.  
NOTE Confidence: 0.945879971  
00:10:30.904 --> 00:10:33.092 But sleep is especially  
NOTE Confidence: 0.945879971  
00:10:33.092 --> 00:10:34.810 important for this process.  
NOTE Confidence: 0.876995131875  
00:10:37.080 --> 00:10:39.940 And so a lot of the stuff these that I'm  
NOTE Confidence: 0.876995131875  
00:10:40.012 --> 00:10:44.650 going to start talking about are using.  
NOTE Confidence: 0.876995131875  
00:10:44.650 --> 00:10:46.888 Two time points to test people.  
NOTE Confidence: 0.876995131875  
00:10:46.890 --> 00:10:47.751 That's very important.  
NOTE Confidence: 0.876995131875  
00:10:47.751 --> 00:10:49.760 We usually have a session either in  
NOTE Confidence: 0.876995131875  
00:10:49.817 --> 00:10:51.378 the evening and then in the morning  
NOTE Confidence: 0.876995131875  
00:10:51.378 --> 00:10:53.287 or in the morning and the evening.  
NOTE Confidence: 0.876995131875

00:10:53.290 --> 00:10:57.354 But the the key is really to have  
NOTE Confidence: 0.876995131875

00:10:57.354 --> 00:10:59.445 two sessions where one is usually  
NOTE Confidence: 0.876995131875

00:10:59.445 --> 00:11:01.250 learning and the other one is.  
NOTE Confidence: 0.876995131875

00:11:01.250 --> 00:11:02.940 Recall to see what happens  
NOTE Confidence: 0.876995131875

00:11:02.940 --> 00:11:04.630 in in between those times.  
NOTE Confidence: 0.866013397777778

00:11:07.260 --> 00:11:10.188 So I'm gonna talk 1st about  
NOTE Confidence: 0.866013397777778

00:11:10.188 --> 00:11:11.652 non declarative memory.  
NOTE Confidence: 0.866013397777778

00:11:11.660 --> 00:11:13.721 So again learning  
NOTE Confidence: 0.866013397777778

00:11:13.721 --> 00:11:16.469 instrument tying your shoes.  
NOTE Confidence: 0.866013397777778

00:11:16.470 --> 00:11:19.080 For that type of learning,  
NOTE Confidence: 0.866013397777778

00:11:19.080 --> 00:11:22.344 one test that has become very  
NOTE Confidence: 0.866013397777778

00:11:22.344 --> 00:11:24.994 established is the motor Skill,  
NOTE Confidence: 0.866013397777778

00:11:24.994 --> 00:11:28.150 learning task or finger tapping tasks.  
NOTE Confidence: 0.866013397777778

00:11:28.150 --> 00:11:29.671 With this test,  
NOTE Confidence: 0.866013397777778

00:11:29.671 --> 00:11:32.713 people have to type a sequence,  
NOTE Confidence: 0.866013397777778

00:11:32.720 --> 00:11:34.740 usually 5 digit number with

NOTE Confidence: 0.86601339777778

00:11:34.740 --> 00:11:36.760 their left non dominant hand.

NOTE Confidence: 0.86601339777778

00:11:36.760 --> 00:11:38.836 The sequence is displayed on the

NOTE Confidence: 0.86601339777778

00:11:38.836 --> 00:11:41.438 computer at all times you do the typing.

NOTE Confidence: 0.86601339777778

00:11:41.440 --> 00:11:43.576 In 32nd trials you rest and

NOTE Confidence: 0.86601339777778

00:11:43.576 --> 00:11:45.600 you do this 12 times.

NOTE Confidence: 0.86601339777778

00:11:45.600 --> 00:11:46.960 So you have 12 trials.

NOTE Confidence: 0.439832

00:11:49.010 --> 00:11:55.189 And. Up 20 years ago.

NOTE Confidence: 0.439832

00:11:55.190 --> 00:11:57.450 Matt Walker, Bob Stickgold published

NOTE Confidence: 0.439832

00:11:57.450 --> 00:12:00.193 this paper in Neuron where they

NOTE Confidence: 0.439832

00:12:00.193 --> 00:12:03.007 proof that this type of memory really

NOTE Confidence: 0.439832

00:12:03.007 --> 00:12:05.108 improves with a night of sleep.

NOTE Confidence: 0.439832

00:12:05.110 --> 00:12:08.740 So on the left. A person trained

NOTE Confidence: 0.439832

00:12:08.740 --> 00:12:11.140 first on the finger tapping test.

NOTE Confidence: 0.439832

00:12:11.140 --> 00:12:13.912 In the morning they come back 12

NOTE Confidence: 0.439832

00:12:13.912 --> 00:12:16.730 hours later in the evening and you

NOTE Confidence: 0.439832

00:12:16.730 --> 00:12:19.242 can see here a little bit improvement,  
NOTE Confidence: 0.439832

00:12:19.242 --> 00:12:20.256 but not significant.  
NOTE Confidence: 0.439832

00:12:20.260 --> 00:12:23.113 Then they go to sleep and in the morning  
NOTE Confidence: 0.439832

00:12:23.113 --> 00:12:25.827 they show the significant improvement.  
NOTE Confidence: 0.439832

00:12:25.830 --> 00:12:27.576 There could have been a question  
NOTE Confidence: 0.439832

00:12:27.576 --> 00:12:29.180 about the sequence of things,  
NOTE Confidence: 0.439832

00:12:29.180 --> 00:12:32.896 so they also had a group that trained  
NOTE Confidence: 0.439832

00:12:32.896 --> 00:12:35.560 in the evening and then you see the  
NOTE Confidence: 0.439832

00:12:35.632 --> 00:12:38.267 significant improvement in the morning  
NOTE Confidence: 0.439832

00:12:38.270 --> 00:12:41.110 and then they do the test again that  
NOTE Confidence: 0.439832

00:12:41.110 --> 00:12:43.991 after 12 hours and not much changes.  
NOTE Confidence: 0.439832

00:12:43.991 --> 00:12:46.276 So it's really sleep that  
NOTE Confidence: 0.439832

00:12:46.276 --> 00:12:47.930 provides the benefit.  
NOTE Confidence: 0.439832

00:12:47.930 --> 00:12:50.258 They also found a correlation between  
NOTE Confidence: 0.439832

00:12:50.258 --> 00:12:52.429 overnight improvement and stage two sleep,  
NOTE Confidence: 0.439832

00:12:52.430 --> 00:12:54.607 and now we know in follow-up studies

NOTE Confidence: 0.439832

00:12:54.607 --> 00:12:56.339 that it's actually the spindles.

NOTE Confidence: 0.439832

00:12:56.340 --> 00:12:59.259 Trying to take the stage to sleep

NOTE Confidence: 0.439832

00:12:59.259 --> 00:13:01.044 that are particularly important

NOTE Confidence: 0.439832

00:13:01.044 --> 00:13:03.700 in in improving this memory.

NOTE Confidence: 0.439832

00:13:03.700 --> 00:13:04.864 So, uhm.

NOTE Confidence: 0.439832

00:13:04.864 --> 00:13:10.390 What I did then is I wanted to see

NOTE Confidence: 0.439832

00:13:10.555 --> 00:13:12.230 if N2 seat is that important.

NOTE Confidence: 0.439832

00:13:12.230 --> 00:13:16.591 What happens when we look at patients

NOTE Confidence: 0.439832

00:13:16.591 --> 00:13:19.190 with obstructive sleep apnea?

NOTE Confidence: 0.439832

00:13:19.190 --> 00:13:23.204 And so we trained healthy controls

NOTE Confidence: 0.439832

00:13:23.204 --> 00:13:27.740 and OSA people on the MSD on the

NOTE Confidence: 0.439832

00:13:27.740 --> 00:13:30.200 motorcycle test in the evening and

NOTE Confidence: 0.439832

00:13:30.200 --> 00:13:32.068 then tested them again in the morning.

NOTE Confidence: 0.439832

00:13:32.070 --> 00:13:35.374 And you can see very nicely here that

NOTE Confidence: 0.439832

00:13:35.374 --> 00:13:38.683 the OSA patients really improved by

NOTE Confidence: 0.439832

00:13:38.683 --> 00:13:42.050 half of what the healthy controls improved.

NOTE Confidence: 0.439832

00:13:42.050 --> 00:13:46.496 And then we looked further into.

NOTE Confidence: 0.439832

00:13:46.500 --> 00:13:49.420 Correlations these were actually

NOTE Confidence: 0.439832

00:13:49.420 --> 00:13:51.244 fairly young participants,

NOTE Confidence: 0.439832

00:13:51.244 --> 00:13:54.156 so they were on average in their 40s.

NOTE Confidence: 0.439832

00:13:54.160 --> 00:13:56.776 They had fairly mild sleep apnea

NOTE Confidence: 0.439832

00:13:56.780 --> 00:13:59.244 and what we found was a correlation

NOTE Confidence: 0.439832

00:13:59.244 --> 00:14:01.439 between the apnea hypoxemia index,

NOTE Confidence: 0.439832

00:14:01.440 --> 00:14:04.380 the oxygen, and the arousal,

NOTE Confidence: 0.439832

00:14:04.380 --> 00:14:06.716 and if you put everything in a model,

NOTE Confidence: 0.439832

00:14:06.720 --> 00:14:08.496 it's really the arousal,

NOTE Confidence: 0.439832

00:14:08.496 --> 00:14:11.160 so the the sleep fragmentation that

NOTE Confidence: 0.439832

00:14:11.241 --> 00:14:13.726 seems to be the most detrimental to

NOTE Confidence: 0.439832

00:14:13.726 --> 00:14:16.429 this type of memory consolidation.

NOTE Confidence: 0.439832

00:14:16.430 --> 00:14:19.418 Because our participants were very young,

NOTE Confidence: 0.439832

00:14:19.420 --> 00:14:21.828 the next question was what happens if

NOTE Confidence: 0.439832

00:14:21.828 --> 00:14:24.726 we look at older people or at aging,

NOTE Confidence: 0.439832

00:14:24.730 --> 00:14:27.360 does this?

NOTE Confidence: 0.439832

00:14:27.360 --> 00:14:29.915 Have any impact also on on memory,

NOTE Confidence: 0.439832

00:14:29.920 --> 00:14:32.110 consolidation and.

NOTE Confidence: 0.7559209994

00:14:34.570 --> 00:14:40.920 We took a group with a wide age range and.

NOTE Confidence: 0.7559209994

00:14:40.920 --> 00:14:44.056 The top you see patients who don't have

NOTE Confidence: 0.7559209994

00:14:44.056 --> 00:14:47.569 OSA in blue at the bottom are patients

NOTE Confidence: 0.7559209994

00:14:47.569 --> 00:14:49.858 with I'm sorry participants with

NOTE Confidence: 0.7559209994

00:14:49.858 --> 00:14:52.630 healthy participants at the bottom are

NOTE Confidence: 0.7559209994

00:14:52.700 --> 00:14:55.830 patients with OSA and what we showed

NOTE Confidence: 0.7559209994

00:14:55.830 --> 00:14:59.327 is that if you don't have OSA and you

NOTE Confidence: 0.7559209994

00:14:59.327 --> 00:15:02.923 can get old and still preserve your

NOTE Confidence: 0.7559209994

00:15:02.923 --> 00:15:05.953 ability to consolidate moder memories,

NOTE Confidence: 0.7559209994

00:15:05.960 --> 00:15:10.163 if you have our say first of all

NOTE Confidence: 0.7559209994

00:15:10.163 --> 00:15:12.870 you perform at. Much lower level,

NOTE Confidence: 0.7559209994

00:15:12.870 --> 00:15:15.750 you have far less overnight improvement,  
NOTE Confidence: 0.7559209994

00:15:15.750 --> 00:15:17.590 but on top of that.  
NOTE Confidence: 0.7559209994

00:15:17.590 --> 00:15:22.854 As you get older, your skills also decline.  
NOTE Confidence: 0.7559209994

00:15:22.860 --> 00:15:25.482 So sleep apnea offers a much  
NOTE Confidence: 0.7559209994

00:15:25.482 --> 00:15:28.902 stronger age effect on on this type  
NOTE Confidence: 0.7559209994

00:15:28.902 --> 00:15:30.486 of memory consolidation.  
NOTE Confidence: 0.85101572

00:15:34.680 --> 00:15:39.110 The next question if was.  
NOTE Confidence: 0.85101572

00:15:39.110 --> 00:15:42.398 If non REM sleep is really that important  
NOTE Confidence: 0.85101572

00:15:42.398 --> 00:15:45.689 for this type of memory consolidation,  
NOTE Confidence: 0.85101572

00:15:45.690 --> 00:15:48.574 what happens if we look at patients  
NOTE Confidence: 0.85101572

00:15:48.574 --> 00:15:52.086 with who only have OSA during REM sleep?  
NOTE Confidence: 0.85101572

00:15:52.090 --> 00:15:54.700 Because REM sleep doesn't seem to  
NOTE Confidence: 0.85101572

00:15:54.700 --> 00:15:59.730 be important and so here we took  
NOTE Confidence: 0.85101572

00:15:59.730 --> 00:16:02.294 participants with healthy controls  
NOTE Confidence: 0.85101572

00:16:02.294 --> 00:16:04.529 that have displayed in blue.  
NOTE Confidence: 0.85101572

00:16:04.530 --> 00:16:09.216 We had REM only OSA patients, so these are.

NOTE Confidence: 0.85101572

00:16:09.216 --> 00:16:11.426 Participants who had normal hi

NOTE Confidence: 0.85101572

00:16:11.426 --> 00:16:14.257 during non REM sleep so it was below

NOTE Confidence: 0.85101572

00:16:14.257 --> 00:16:17.394 5 and then we had a group that had

NOTE Confidence: 0.85101572

00:16:17.394 --> 00:16:20.058 OSA during then REM sleep and non

NOTE Confidence: 0.85101572

00:16:20.058 --> 00:16:21.930 REM sleep and on the left.

NOTE Confidence: 0.85101572

00:16:21.930 --> 00:16:23.330 This is a different display

NOTE Confidence: 0.85101572

00:16:23.330 --> 00:16:24.870 of the motorcycle test.

NOTE Confidence: 0.85101572

00:16:24.870 --> 00:16:26.892 You can see the individual training

NOTE Confidence: 0.85101572

00:16:26.892 --> 00:16:28.960 sessions here at this place so

NOTE Confidence: 0.85101572

00:16:28.960 --> 00:16:30.605 there are 12 training sessions

NOTE Confidence: 0.85101572

00:16:30.610 --> 00:16:32.046 in the evening participants.

NOTE Confidence: 0.85101572

00:16:32.046 --> 00:16:34.671 There's a little bit of a difference

NOTE Confidence: 0.85101572

00:16:34.671 --> 00:16:36.666 but it's actually not significant

NOTE Confidence: 0.85101572

00:16:36.666 --> 00:16:39.200 so more or less they perform.

NOTE Confidence: 0.85101572

00:16:39.200 --> 00:16:40.928 When they learn the tests in

NOTE Confidence: 0.85101572

00:16:40.928 --> 00:16:43.308 the same way and then the next  
NOTE Confidence: 0.85101572

00:16:43.308 --> 00:16:45.193 morning when they get retested,  
NOTE Confidence: 0.85101572

00:16:45.200 --> 00:16:47.150 you can see very nicely that  
NOTE Confidence: 0.85101572

00:16:47.150 --> 00:16:49.060 the people who have non REM,  
NOTE Confidence: 0.85101572

00:16:49.060 --> 00:16:51.920 R.E.M., OSA don't show any.  
NOTE Confidence: 0.85101572

00:16:51.920 --> 00:16:54.885 Don't show much improvement versus  
NOTE Confidence: 0.85101572

00:16:54.885 --> 00:16:59.000 the REM OSA patients and the  
NOTE Confidence: 0.85101572

00:16:59.000 --> 00:17:01.816 controls that perform absolutely  
NOTE Confidence: 0.85101572

00:17:01.816 --> 00:17:04.295 identical so fragmented REM sleep  
NOTE Confidence: 0.85101572

00:17:04.295 --> 00:17:07.205 doesn't seem to affect this type  
NOTE Confidence: 0.85101572

00:17:07.205 --> 00:17:09.948 of RAM memory consolidation.  
NOTE Confidence: 0.85101572

00:17:09.950 --> 00:17:12.950 There was another so you can  
NOTE Confidence: 0.85101572

00:17:12.950 --> 00:17:15.603 using REM related apnea is a very  
NOTE Confidence: 0.85101572

00:17:15.603 --> 00:17:18.330 elegant way to fragment REM sleep.  
NOTE Confidence: 0.85101572

00:17:18.330 --> 00:17:21.530 You can also use pharmacotherapy  
NOTE Confidence: 0.85101572

00:17:21.530 --> 00:17:25.760 and young born from Germany.

NOTE Confidence: 0.85101572

00:17:25.760 --> 00:17:28.763 Has published a paper a few years

NOTE Confidence: 0.85101572

00:17:28.763 --> 00:17:31.302 ago where they gave participants

NOTE Confidence: 0.85101572

00:17:31.302 --> 00:17:34.207 REM suppressing medication so they

NOTE Confidence: 0.85101572

00:17:34.207 --> 00:17:38.317 gave them an SSRI and SNRI that

NOTE Confidence: 0.85101572

00:17:38.317 --> 00:17:40.593 those fluvoxamine and reboxetine

NOTE Confidence: 0.85101572

00:17:40.600 --> 00:17:44.944 and at the top you can see how

NOTE Confidence: 0.85101572

00:17:44.950 --> 00:17:47.620 the participant had far less REM

NOTE Confidence: 0.85101572

00:17:47.620 --> 00:17:49.400 sleep with these medication.

NOTE Confidence: 0.85101572

00:17:49.400 --> 00:17:51.740 And interestingly when they had

NOTE Confidence: 0.85101572

00:17:51.740 --> 00:17:54.080 them perform the same test.

NOTE Confidence: 0.85101572

00:17:54.080 --> 00:17:55.885 The motor skill learning tests

NOTE Confidence: 0.85101572

00:17:55.885 --> 00:17:58.070 and also in mirror drawing test.

NOTE Confidence: 0.85101572

00:17:58.070 --> 00:17:59.980 Which is another procedural test,

NOTE Confidence: 0.85101572

00:17:59.980 --> 00:18:02.805 and they found that participant

NOTE Confidence: 0.85101572

00:18:02.805 --> 00:18:05.316 actually performed better than those

NOTE Confidence: 0.85101572

00:18:05.316 --> 00:18:07.356 that didn't receive the medication.  
NOTE Confidence: 0.85101572

00:18:07.360 --> 00:18:09.328 And even though this was published  
NOTE Confidence: 0.85101572

00:18:09.328 --> 00:18:10.312 in Nature Neuroscience,  
NOTE Confidence: 0.85101572

00:18:10.320 --> 00:18:14.674 they don't provide a lot of explanation.  
NOTE Confidence: 0.85101572

00:18:14.680 --> 00:18:17.070 All they say is, well,  
NOTE Confidence: 0.85101572

00:18:17.070 --> 00:18:18.820 REM sleep can't be important  
NOTE Confidence: 0.85101572

00:18:18.820 --> 00:18:21.130 then for this type of memory.  
NOTE Confidence: 0.85101572

00:18:21.130 --> 00:18:25.156 But this really also emphasizes that  
NOTE Confidence: 0.85101572

00:18:25.160 --> 00:18:28.040 the different sleep stages are truly.  
NOTE Confidence: 0.85101572

00:18:28.040 --> 00:18:30.320 Important for different types of memories.  
NOTE Confidence: 0.785240875555556

00:18:34.440 --> 00:18:38.373 I'd like to move to a emotional memories now,  
NOTE Confidence: 0.785240875555556

00:18:38.380 --> 00:18:41.138 which, UM, as as we all know,  
NOTE Confidence: 0.785240875555556

00:18:41.140 --> 00:18:43.520 hold it dear spot in all our memories on the  
NOTE Confidence: 0.785240875555556

00:18:43.580 --> 00:18:46.020 left I usually show because I'm from Germany,  
NOTE Confidence: 0.785240875555556

00:18:46.020 --> 00:18:47.676 the fall of the the wall,  
NOTE Confidence: 0.785240875555556

00:18:47.680 --> 00:18:51.682 which is about 33 years ago and I have

NOTE Confidence: 0.785240875555556  
00:18:51.682 --> 00:18:54.670 to say that at that time things looked a  
NOTE Confidence: 0.785240875555556  
00:18:54.749 --> 00:18:59.350 lot more bright than they do now, but.  
NOTE Confidence: 0.785240875555556  
00:18:59.350 --> 00:19:02.960 For to test emotional memory.  
NOTE Confidence: 0.785240875555556  
00:19:02.960 --> 00:19:05.195 We use something called an  
NOTE Confidence: 0.785240875555556  
00:19:05.195 --> 00:19:06.536 emotional tradeoff test,  
NOTE Confidence: 0.785240875555556  
00:19:06.540 --> 00:19:08.958 which was developed by Elizabeth Kensinger,  
NOTE Confidence: 0.785240875555556  
00:19:08.960 --> 00:19:12.830 who's now at Boston College.  
NOTE Confidence: 0.785240875555556  
00:19:12.830 --> 00:19:16.857 And in this task you have objects  
NOTE Confidence: 0.785240875555556  
00:19:16.857 --> 00:19:19.426 and backgrounds you have on the left.  
NOTE Confidence: 0.785240875555556  
00:19:19.430 --> 00:19:24.610 You have an example of neutral backgrounds.  
NOTE Confidence: 0.785240875555556  
00:19:24.610 --> 00:19:26.414 And a neutral object.  
NOTE Confidence: 0.785240875555556  
00:19:26.414 --> 00:19:30.209 And here is a neutral background and emotion.  
NOTE Confidence: 0.785240875555556  
00:19:30.210 --> 00:19:33.046 Negative emotional background object  
NOTE Confidence: 0.785240875555556  
00:19:33.046 --> 00:19:38.055 and the task pass the neutral objects  
NOTE Confidence: 0.785240875555556  
00:19:38.055 --> 00:19:41.250 with with the neutral backgrounds with  
NOTE Confidence: 0.785240875555556

00:19:41.250 --> 00:19:43.800 either neutral objects or emotional  
NOTE Confidence: 0.785240875555556

00:19:43.883 --> 00:19:45.627 objects and initially participants  
NOTE Confidence: 0.785240875555556

00:19:45.627 --> 00:19:49.036 just have to take a look at these  
NOTE Confidence: 0.785240875555556

00:19:49.036 --> 00:19:51.521 pictures and and try and study them  
NOTE Confidence: 0.785240875555556

00:19:51.521 --> 00:19:53.770 and then when they get retested.  
NOTE Confidence: 0.785240875555556

00:19:53.770 --> 00:19:57.482 They only see the object or the background  
NOTE Confidence: 0.785240875555556

00:19:57.482 --> 00:20:00.108 in isolation and they are asked,  
NOTE Confidence: 0.785240875555556

00:20:00.110 --> 00:20:02.686 but they are also at the recall test.  
NOTE Confidence: 0.785240875555556

00:20:02.690 --> 00:20:06.070 They're being shown similar items  
NOTE Confidence: 0.785240875555556

00:20:06.070 --> 00:20:07.930 and completely new items,  
NOTE Confidence: 0.785240875555556

00:20:07.930 --> 00:20:10.980 and they are asked if specifically is  
NOTE Confidence: 0.785240875555556

00:20:10.980 --> 00:20:13.500 this the same that you saw before?  
NOTE Confidence: 0.785240875555556

00:20:13.500 --> 00:20:18.680 Is it similar or is it a new item and?  
NOTE Confidence: 0.785240875555556

00:20:18.680 --> 00:20:20.830 Jessica Payne,  
NOTE Confidence: 0.785240875555556

00:20:20.830 --> 00:20:23.740 who worked in bucked Stickels group,  
NOTE Confidence: 0.785240875555556

00:20:23.740 --> 00:20:26.836 looked at this task with healthy

NOTE Confidence: 0.785240875555556  
00:20:26.836 --> 00:20:27.868 college students.  
NOTE Confidence: 0.785240875555556  
00:20:27.870 --> 00:20:30.910 And we can first look on the right  
NOTE Confidence: 0.785240875555556  
00:20:30.910 --> 00:20:33.480 side on the neutral scenes.  
NOTE Confidence: 0.785240875555556  
00:20:33.480 --> 00:20:35.588 People were tested repeatedly  
NOTE Confidence: 0.785240875555556  
00:20:35.588 --> 00:20:38.750 and over the course of time.  
NOTE Confidence: 0.785240875555556  
00:20:38.750 --> 00:20:41.390 The combination of neutral objects  
NOTE Confidence: 0.785240875555556  
00:20:41.390 --> 00:20:43.502 and neutral backgrounds doesn't  
NOTE Confidence: 0.785240875555556  
00:20:43.502 --> 00:20:45.339 really change that much,  
NOTE Confidence: 0.785240875555556  
00:20:45.340 --> 00:20:48.538 so there's no big disk discrepancy  
NOTE Confidence: 0.785240875555556  
00:20:48.540 --> 00:20:50.556 when you look on the left,  
NOTE Confidence: 0.785240875555556  
00:20:50.560 --> 00:20:54.565 the first thing you can notice is that the  
NOTE Confidence: 0.785240875555556  
00:20:54.565 --> 00:20:58.157 negative scenes are remembered a lot better,  
NOTE Confidence: 0.785240875555556  
00:20:58.160 --> 00:21:01.348 and what happens though.  
NOTE Confidence: 0.785240875555556  
00:21:01.350 --> 00:21:02.565 When people sleep,  
NOTE Confidence: 0.785240875555556  
00:21:02.565 --> 00:21:04.995 is that they appear to remember  
NOTE Confidence: 0.785240875555556

00:21:04.995 --> 00:21:06.707 after a night of sleep,  
NOTE Confidence: 0.785240875555556

00:21:06.710 --> 00:21:09.678 they appear to remember the negative objects  
NOTE Confidence: 0.785240875555556

00:21:09.678 --> 00:21:12.828 lot better at the cost of the objects,  
NOTE Confidence: 0.785240875555556

00:21:12.830 --> 00:21:15.685 so they really filter out that  
NOTE Confidence: 0.785240875555556

00:21:15.685 --> 00:21:19.615 negative memory at the expense of  
NOTE Confidence: 0.785240875555556

00:21:19.615 --> 00:21:23.366 the of the object or the background.  
NOTE Confidence: 0.785240875555556

00:21:23.370 --> 00:21:25.287 And so,  
NOTE Confidence: 0.785240875555556

00:21:25.287 --> 00:21:26.972 that's that's what we call  
NOTE Confidence: 0.785240875555556

00:21:26.972 --> 00:21:27.983 the emotional tradeoff,  
NOTE Confidence: 0.785240875555556

00:21:27.990 --> 00:21:31.446 which is facilitated by by sleep,  
NOTE Confidence: 0.785240875555556

00:21:31.450 --> 00:21:32.839 and I'm sorry.  
NOTE Confidence: 0.886263129473684

00:21:36.990 --> 00:21:40.230 So we felt that it was important to look  
NOTE Confidence: 0.886263129473684

00:21:40.230 --> 00:21:42.994 also at OSA patients because there's  
NOTE Confidence: 0.886263129473684

00:21:42.994 --> 00:21:47.960 a lot of depression, anxiety and.  
NOTE Confidence: 0.886263129473684

00:21:47.960 --> 00:21:50.520 Psychopathology in these patients.  
NOTE Confidence: 0.886263129473684

00:21:50.520 --> 00:21:54.268 And we used the Group of healthy

NOTE Confidence: 0.886263129473684  
00:21:54.268 --> 00:21:57.558 controls and patients with OSA.  
NOTE Confidence: 0.886263129473684  
00:21:57.560 --> 00:22:00.605 And we gave them the emotional tradeoff  
NOTE Confidence: 0.886263129473684  
00:22:00.605 --> 00:22:03.650 test and the question was, are they  
NOTE Confidence: 0.886263129473684  
00:22:03.650 --> 00:22:06.239 showing the same emotional trade off?  
NOTE Confidence: 0.886263129473684  
00:22:06.240 --> 00:22:08.300 And how are they remembering  
NOTE Confidence: 0.886263129473684  
00:22:08.300 --> 00:22:09.536 these these objects?  
NOTE Confidence: 0.886263129473684  
00:22:09.540 --> 00:22:12.665 And what we found was that across  
NOTE Confidence: 0.886263129473684  
00:22:12.665 --> 00:22:16.115 the board OSA patients remember less.  
NOTE Confidence: 0.886263129473684  
00:22:16.120 --> 00:22:18.256 They remember less objects,  
NOTE Confidence: 0.886263129473684  
00:22:18.256 --> 00:22:19.858 they remember less.  
NOTE Confidence: 0.886263129473684  
00:22:19.860 --> 00:22:22.620 Background, it doesn't matter.  
NOTE Confidence: 0.886263129473684  
00:22:22.620 --> 00:22:23.570 Neutral objects,  
NOTE Confidence: 0.886263129473684  
00:22:23.570 --> 00:22:24.520 emotional objects,  
NOTE Confidence: 0.886263129473684  
00:22:24.520 --> 00:22:27.901 the the memory is just not as  
NOTE Confidence: 0.886263129473684  
00:22:27.901 --> 00:22:30.136 good as in healthy participants.  
NOTE Confidence: 0.886263129473684

00:22:30.140 --> 00:22:35.100 What they still preserved was the ability to.

NOTE Confidence: 0.886263129473684

00:22:35.100 --> 00:22:36.760 Half the emotional trade off,

NOTE Confidence: 0.886263129473684

00:22:36.760 --> 00:22:39.476 so that doesn't seem to be affected

NOTE Confidence: 0.886263129473684

00:22:39.480 --> 00:22:42.973 and that just shows that even though

NOTE Confidence: 0.886263129473684

00:22:42.973 --> 00:22:45.919 these people have less REM sleep,

NOTE Confidence: 0.886263129473684

00:22:45.919 --> 00:22:48.758 which is often correlates with poorer

NOTE Confidence: 0.886263129473684

00:22:48.758 --> 00:22:50.848 memory consolidation on this task,

NOTE Confidence: 0.886263129473684

00:22:50.850 --> 00:22:52.860 they still preserve this ability.

NOTE Confidence: 0.885351915

00:22:57.380 --> 00:23:00.980 So next I want to move to the effect

NOTE Confidence: 0.885351915

00:23:00.980 --> 00:23:04.460 of treatment on memory recovery.

NOTE Confidence: 0.885351915

00:23:04.460 --> 00:23:08.722 So there is. There's short term

NOTE Confidence: 0.885351915

00:23:08.722 --> 00:23:11.830 CPAP effect and the reason I wanted

NOTE Confidence: 0.885351915

00:23:11.912 --> 00:23:14.926 to look at that is because a lot

NOTE Confidence: 0.885351915

00:23:14.926 --> 00:23:17.992 of patients say the first night of

NOTE Confidence: 0.885351915

00:23:17.992 --> 00:23:21.830 CPAP is can be very life altering,

NOTE Confidence: 0.885351915

00:23:21.830 --> 00:23:24.718 can have a big impact and I wanted

NOTE Confidence: 0.885351915

00:23:24.718 --> 00:23:27.635 to see if it would also resolve

NOTE Confidence: 0.885351915

00:23:27.635 --> 00:23:31.060 some of these memory deficits.

NOTE Confidence: 0.885351915

00:23:31.060 --> 00:23:35.379 And so here we had three groups,

NOTE Confidence: 0.885351915

00:23:35.380 --> 00:23:38.542 one group that was a healthy

NOTE Confidence: 0.885351915

00:23:38.542 --> 00:23:41.260 control Group One group with.

NOTE Confidence: 0.885351915

00:23:41.260 --> 00:23:43.294 Sleep apnea, OSA and one group

NOTE Confidence: 0.885351915

00:23:43.294 --> 00:23:45.247 that received the first night of

NOTE Confidence: 0.885351915

00:23:45.247 --> 00:23:47.359 C Pap in their life so they work.

NOTE Confidence: 0.885351915

00:23:47.360 --> 00:23:48.190 Pap. Naive.

NOTE Confidence: 0.885351915

00:23:48.190 --> 00:23:50.981 They were just diagnosed with OSA and

NOTE Confidence: 0.885351915

00:23:50.981 --> 00:23:53.389 you can see that the see PAP group

NOTE Confidence: 0.885351915

00:23:53.389 --> 00:23:56.070 and Control group have very similar.

NOTE Confidence: 0.885351915

00:23:56.070 --> 00:23:58.470 Hi, they were not significantly different.

NOTE Confidence: 0.75611949

00:24:00.710 --> 00:24:03.350 Also, sleep stages didn't

NOTE Confidence: 0.75611949

00:24:03.350 --> 00:24:05.330 show significant differences,

NOTE Confidence: 0.75611949

00:24:05.330 --> 00:24:07.640 so overall they sleep looked very  
NOTE Confidence: 0.75611949

00:24:07.640 --> 00:24:10.228 similar as opposed to the OSA group,  
NOTE Confidence: 0.75611949

00:24:10.230 --> 00:24:15.940 which as expected had a hi hi, lower nedeia.  
NOTE Confidence: 0.75611949

00:24:15.940 --> 00:24:18.868 And here you can see how  
NOTE Confidence: 0.75611949

00:24:18.868 --> 00:24:20.820 these groups performed during  
NOTE Confidence: 0.75611949

00:24:20.913 --> 00:24:23.983 evening training on the left.  
NOTE Confidence: 0.75611949

00:24:23.983 --> 00:24:27.770 In blue you have the group before  
NOTE Confidence: 0.75611949

00:24:27.889 --> 00:24:30.120 they get CPAP, so they actually  
NOTE Confidence: 0.75611949

00:24:30.120 --> 00:24:31.880 performed a little bit worse,  
NOTE Confidence: 0.75611949

00:24:31.880 --> 00:24:33.228 but it wasn't significant.  
NOTE Confidence: 0.75611949

00:24:33.228 --> 00:24:35.722 Here's the group, the OSA Group,  
NOTE Confidence: 0.75611949

00:24:35.722 --> 00:24:37.698 which remains without treatment.  
NOTE Confidence: 0.75611949

00:24:37.700 --> 00:24:40.650 And then you have controls.  
NOTE Confidence: 0.75611949

00:24:40.650 --> 00:24:42.417 The next morning,  
NOTE Confidence: 0.75611949

00:24:42.417 --> 00:24:44.184 the controls outperform  
NOTE Confidence: 0.75611949

00:24:44.184 --> 00:24:46.540 everybody and then the.

NOTE Confidence: 0.633165467142857  
00:24:49.120 --> 00:24:53.117 At morning retest the see PAP group that  
NOTE Confidence: 0.633165467142857  
00:24:53.117 --> 00:24:55.679 supposedly slept better is actually down  
NOTE Confidence: 0.633165467142857  
00:24:55.679 --> 00:24:59.026 here and the OSA group is in the middle.  
NOTE Confidence: 0.633165467142857  
00:24:59.030 --> 00:25:02.801 We then also just to see if it has to do  
NOTE Confidence: 0.633165467142857  
00:25:02.801 --> 00:25:07.270 with. Sometimes recall has to do with.  
NOTE Confidence: 0.633165467142857  
00:25:07.270 --> 00:25:10.820 Sleep inertia, sleepiness, or attention.  
NOTE Confidence: 0.633165467142857  
00:25:10.820 --> 00:25:12.976 We often have them learn a new  
NOTE Confidence: 0.633165467142857  
00:25:12.976 --> 00:25:15.414 sequence to see how they perform in  
NOTE Confidence: 0.633165467142857  
00:25:15.414 --> 00:25:17.428 general in the morning, and here's  
NOTE Confidence: 0.633165467142857  
00:25:17.428 --> 00:25:19.416 how they all learn and look sequence,  
NOTE Confidence: 0.633165467142857  
00:25:19.420 --> 00:25:24.390 so that's very similar. So.  
NOTE Confidence: 0.633165467142857  
00:25:24.390 --> 00:25:28.332 Overall this no improvement after a  
NOTE Confidence: 0.633165467142857  
00:25:28.332 --> 00:25:32.500 first night of using CPAP despite  
NOTE Confidence: 0.633165467142857  
00:25:32.500 --> 00:25:35.420 changes in sleep architecture.  
NOTE Confidence: 0.633165467142857  
00:25:35.420 --> 00:25:39.070 What did change was the we also  
NOTE Confidence: 0.633165467142857

00:25:39.070 --> 00:25:40.570 have them do the PDT.  
NOTE Confidence: 0.633165467142857

00:25:40.570 --> 00:25:43.920 The second motor vigilance test.  
NOTE Confidence: 0.633165467142857

00:25:43.920 --> 00:25:46.576 This is the change in reaction time from  
NOTE Confidence: 0.633165467142857

00:25:46.576 --> 00:25:49.288 the evening session to the morning session.  
NOTE Confidence: 0.633165467142857

00:25:49.290 --> 00:25:51.146 So the see PAP group here in blue.  
NOTE Confidence: 0.633165467142857

00:25:51.150 --> 00:25:53.404 They were much faster in the morning,  
NOTE Confidence: 0.633165467142857

00:25:53.410 --> 00:25:55.786 so much more attention vigilance always.  
NOTE Confidence: 0.633165467142857

00:25:55.790 --> 00:25:58.730 A group was slower and control  
NOTE Confidence: 0.633165467142857

00:25:58.730 --> 00:26:03.360 so more or less the same. Uhm?  
NOTE Confidence: 0.633165467142857

00:26:03.360 --> 00:26:05.312 What was striking, though,  
NOTE Confidence: 0.633165467142857

00:26:05.312 --> 00:26:09.044 was also that the group that received  
NOTE Confidence: 0.633165467142857

00:26:09.044 --> 00:26:11.874 CPAP felt subjectively much more  
NOTE Confidence: 0.633165467142857

00:26:11.874 --> 00:26:14.220 rested compared to the OSA group.  
NOTE Confidence: 0.633165467142857

00:26:14.220 --> 00:26:17.979 So in summary, they feel more rested,  
NOTE Confidence: 0.633165467142857

00:26:17.980 --> 00:26:19.716 they have better attention,  
NOTE Confidence: 0.633165467142857

00:26:19.716 --> 00:26:22.320 but the sleep dependent memory consolidation

NOTE Confidence: 0.633165467142857  
00:26:22.387 --> 00:26:24.497 really hasn't changed that quickly.  
NOTE Confidence: 0.633165467142857  
00:26:24.500 --> 00:26:26.630 And.  
NOTE Confidence: 0.633165467142857  
00:26:26.630 --> 00:26:27.858 As a follow up.  
NOTE Confidence: 0.854455316470588  
00:26:33.040 --> 00:26:36.057 I wanted to see what happens when  
NOTE Confidence: 0.854455316470588  
00:26:36.057 --> 00:26:37.799 participants of inpatients you  
NOTE Confidence: 0.854455316470588  
00:26:37.799 --> 00:26:40.019 cpap for longer periods of time.  
NOTE Confidence: 0.854455316470588  
00:26:40.020 --> 00:26:42.808 Is there recovery possible?  
NOTE Confidence: 0.854455316470588  
00:26:42.810 --> 00:26:45.006 So for this I actually used.  
NOTE Confidence: 0.854455316470588  
00:26:45.010 --> 00:26:46.922 I have to introduce a new test so  
NOTE Confidence: 0.854455316470588  
00:26:46.922 --> 00:26:48.748 I'm not using the MST anymore.  
NOTE Confidence: 0.854455316470588  
00:26:48.750 --> 00:26:52.998 I moved on to the declarative memory test.  
NOTE Confidence: 0.854455316470588  
00:26:53.000 --> 00:26:57.790 Which is a word pair task in which  
NOTE Confidence: 0.854455316470588  
00:26:57.790 --> 00:27:00.499 participants have to learn 40 related  
NOTE Confidence: 0.854455316470588  
00:27:00.499 --> 00:27:03.271 word pairs that are presented on  
NOTE Confidence: 0.854455316470588  
00:27:03.271 --> 00:27:05.390 a computer so they look at them.  
NOTE Confidence: 0.854455316470588

00:27:05.390 --> 00:27:08.603 Then they have a recall test where  
NOTE Confidence: 0.854455316470588

00:27:08.603 --> 00:27:10.724 they see the first word and they  
NOTE Confidence: 0.854455316470588

00:27:10.724 --> 00:27:13.295 have to put in the second one and  
NOTE Confidence: 0.854455316470588

00:27:13.295 --> 00:27:15.435 that list is presented repeatedly in  
NOTE Confidence: 0.854455316470588

00:27:15.435 --> 00:27:17.853 a different order until they recall  
NOTE Confidence: 0.854455316470588

00:27:17.860 --> 00:27:20.446 at least 24 word pairs correctly,  
NOTE Confidence: 0.854455316470588

00:27:20.450 --> 00:27:22.470 and that's called the 60% criterion.  
NOTE Confidence: 0.854455316470588

00:27:22.470 --> 00:27:26.310 The reason we do that is so that  
NOTE Confidence: 0.854455316470588

00:27:26.310 --> 00:27:29.057 everybody achieves the same level.  
NOTE Confidence: 0.854455316470588

00:27:29.060 --> 00:27:32.690 Uh-huh learns this the the test to the  
NOTE Confidence: 0.854455316470588

00:27:32.690 --> 00:27:35.050 same level and then in the morning we  
NOTE Confidence: 0.854455316470588

00:27:35.126 --> 00:27:37.598 give them a piece of paper with the  
NOTE Confidence: 0.854455316470588

00:27:37.598 --> 00:27:40.033 first word and they have to put in  
NOTE Confidence: 0.854455316470588

00:27:40.033 --> 00:27:43.304 the second word and that determines  
NOTE Confidence: 0.854455316470588

00:27:43.304 --> 00:27:46.240 their recall across the night of sleep.  
NOTE Confidence: 0.919023065

00:27:48.380 --> 00:27:51.900 So for this experiment,

NOTE Confidence: 0.919023065

00:27:51.900 --> 00:27:56.120 we enrolled our essay patients

NOTE Confidence: 0.919023065

00:27:56.120 --> 00:27:59.400 and healthy controls initially

NOTE Confidence: 0.919023065

00:27:59.400 --> 00:28:02.112 and part one was just to get a

NOTE Confidence: 0.919023065

00:28:02.112 --> 00:28:05.525 sense of how different are they

NOTE Confidence: 0.919023065

00:28:05.525 --> 00:28:08.173 consolidating this declarative memory.

NOTE Confidence: 0.919023065

00:28:08.180 --> 00:28:11.393 So that was part one of the overnight visit.

NOTE Confidence: 0.919023065

00:28:11.400 --> 00:28:17.160 Uhm? Then the also patients

NOTE Confidence: 0.919023065

00:28:17.160 --> 00:28:19.332 were randomized into a C PAP

NOTE Confidence: 0.919023065

00:28:19.332 --> 00:28:21.669 group and an oak PAP group.

NOTE Confidence: 0.671015682

00:28:23.850 --> 00:28:27.760 The see PAP Group received a device

NOTE Confidence: 0.671015682

00:28:27.760 --> 00:28:31.228 and auto titrating device both groups

NOTE Confidence: 0.671015682

00:28:31.228 --> 00:28:34.498 watched a presentation on healthy

NOTE Confidence: 0.671015682

00:28:34.498 --> 00:28:37.440 lifestyle changes and exercise.

NOTE Confidence: 0.671015682

00:28:37.440 --> 00:28:40.032 We had long debated whether we

NOTE Confidence: 0.671015682

00:28:40.032 --> 00:28:42.969 should use spam pub or sham CPAP.

NOTE Confidence: 0.671015682

00:28:42.970 --> 00:28:45.410 Or you know something else.

NOTE Confidence: 0.671015682

00:28:45.410 --> 00:28:49.066 But we decided that a lot of people

NOTE Confidence: 0.671015682

00:28:49.070 --> 00:28:50.966 change their behavior when they get

NOTE Confidence: 0.671015682

00:28:50.966 --> 00:28:53.492 a diagnosis of OSA and that's why we

NOTE Confidence: 0.671015682

00:28:53.492 --> 00:28:55.580 why we focus on lifestyle changes and.

NOTE Confidence: 0.870313526052632

00:28:58.100 --> 00:28:59.969 Patients were asked to use the see

NOTE Confidence: 0.870313526052632

00:28:59.969 --> 00:29:02.214 PAP for three months and during that

NOTE Confidence: 0.870313526052632

00:29:02.214 --> 00:29:03.944 time we checked their compliance.

NOTE Confidence: 0.870313526052632

00:29:03.950 --> 00:29:06.382 We worked with them.

NOTE Confidence: 0.870313526052632

00:29:06.382 --> 00:29:09.300 We also checked on their diet and

NOTE Confidence: 0.870313526052632

00:29:09.300 --> 00:29:11.391 exercise and both groups and then

NOTE Confidence: 0.870313526052632

00:29:11.391 --> 00:29:13.312 they came back after three months

NOTE Confidence: 0.870313526052632

00:29:13.312 --> 00:29:15.356 and they again went were tested with

NOTE Confidence: 0.870313526052632

00:29:15.356 --> 00:29:17.284 a new version of the declarative

NOTE Confidence: 0.870313526052632

00:29:17.284 --> 00:29:19.802 test of the learned new set of word

NOTE Confidence: 0.870313526052632

00:29:19.802 --> 00:29:21.636 pairs in the evening and then in

NOTE Confidence: 0.870313526052632  
00:29:21.636 --> 00:29:24.455 the morning they have the recall  
NOTE Confidence: 0.870313526052632  
00:29:24.455 --> 00:29:27.900 test and we just published this.  
NOTE Confidence: 0.870313526052632  
00:29:27.900 --> 00:29:29.048 In the Blue journal.  
NOTE Confidence: 0.837513853333333  
00:29:31.420 --> 00:29:35.102 It showed that overall there  
NOTE Confidence: 0.837513853333333  
00:29:35.102 --> 00:29:38.329 was a nice recovery of the sleep  
NOTE Confidence: 0.837513853333333  
00:29:38.329 --> 00:29:40.004 dependent declarative memory  
NOTE Confidence: 0.837513853333333  
00:29:40.004 --> 00:29:43.400 deficits after three months of CPAP.  
NOTE Confidence: 0.837513853333333  
00:29:43.400 --> 00:29:46.456 So I'll walk you through these through  
NOTE Confidence: 0.837513853333333  
00:29:46.456 --> 00:29:50.130 these bars so and blue you see the  
NOTE Confidence: 0.837513853333333  
00:29:50.130 --> 00:29:52.710 baseline performance and you have the  
NOTE Confidence: 0.837513853333333  
00:29:52.710 --> 00:29:56.193 group here to the left that did not receive.  
NOTE Confidence: 0.837513853333333  
00:29:56.200 --> 00:29:59.512 That has OSA, but did not receive C PAP.  
NOTE Confidence: 0.837513853333333  
00:29:59.520 --> 00:30:01.450 You have the pop group.  
NOTE Confidence: 0.837513853333333  
00:30:01.450 --> 00:30:03.334 That's that baseline,  
NOTE Confidence: 0.837513853333333  
00:30:03.334 --> 00:30:06.777 and this is after three months of  
NOTE Confidence: 0.837513853333333

00:30:06.777 --> 00:30:09.795 using C PAP and then on the right in  
NOTE Confidence: 0.8375138533333333

00:30:09.795 --> 00:30:12.117 you have the healthy control group  
NOTE Confidence: 0.8375138533333333

00:30:12.120 --> 00:30:16.056 and what is really uplifting to see is  
NOTE Confidence: 0.8375138533333333

00:30:16.056 --> 00:30:20.365 that the C Pap group really reached the  
NOTE Confidence: 0.8375138533333333

00:30:20.365 --> 00:30:24.510 same level as the healthy controls.  
NOTE Confidence: 0.8375138533333333

00:30:24.510 --> 00:30:25.606 I will say though,  
NOTE Confidence: 0.8375138533333333

00:30:25.606 --> 00:30:27.670 that because it was a small study,  
NOTE Confidence: 0.8375138533333333

00:30:27.670 --> 00:30:30.113 they received a lot of attention and  
NOTE Confidence: 0.8375138533333333

00:30:30.113 --> 00:30:32.649 they had really excellent compliance.  
NOTE Confidence: 0.8375138533333333

00:30:32.650 --> 00:30:34.323 So they were all between 5:00 and  
NOTE Confidence: 0.8375138533333333

00:30:34.323 --> 00:30:35.980 six hours of using their CPAP.  
NOTE Confidence: 0.698258932

00:30:39.930 --> 00:30:44.166 And, uh. When we looked closer,  
NOTE Confidence: 0.698258932

00:30:44.170 --> 00:30:46.700 what is determining the improvement  
NOTE Confidence: 0.698258932

00:30:46.700 --> 00:30:50.480 it was actually the end 3 sleep the  
NOTE Confidence: 0.698258932

00:30:50.480 --> 00:30:53.530 amount of N3 sleep that they were in,  
NOTE Confidence: 0.698258932

00:30:53.530 --> 00:30:55.450 so that has been shown before

NOTE Confidence: 0.698258932

00:30:55.450 --> 00:30:57.729 but that was at the baseline.

NOTE Confidence: 0.698258932

00:30:57.730 --> 00:31:00.410 Comparing controls and OSA

NOTE Confidence: 0.698258932

00:31:00.410 --> 00:31:03.546 patients and then we were able to

NOTE Confidence: 0.698258932

00:31:03.546 --> 00:31:07.082 show that in the C PAP group the

NOTE Confidence: 0.698258932

00:31:07.082 --> 00:31:10.114 amount of ends we increase really

NOTE Confidence: 0.698258932

00:31:10.114 --> 00:31:13.300 determined also how much they were.

NOTE Confidence: 0.698258932

00:31:13.300 --> 00:31:16.709 Better able to remember the word pairs.

NOTE Confidence: 0.910088664285714

00:31:20.970 --> 00:31:23.970 And so I just want to stop for

NOTE Confidence: 0.910088664285714

00:31:23.970 --> 00:31:26.649 a moment and talk about the.

NOTE Confidence: 0.910088664285714

00:31:26.650 --> 00:31:30.376 The street light effect which is,

NOTE Confidence: 0.910088664285714

00:31:30.380 --> 00:31:33.170 I think part of the problem,

NOTE Confidence: 0.910088664285714

00:31:33.170 --> 00:31:37.018 why some of the larger studies that

NOTE Confidence: 0.910088664285714

00:31:37.018 --> 00:31:39.321 have looked at the effect of skypad

NOTE Confidence: 0.910088664285714

00:31:39.321 --> 00:31:41.447 like the Apple study for example,

NOTE Confidence: 0.910088664285714

00:31:41.450 --> 00:31:45.410 have had trouble seeing an effect.

NOTE Confidence: 0.910088664285714

00:31:45.410 --> 00:31:48.351 So the streetlight effect is where

NOTE Confidence: 0.910088664285714

00:31:48.351 --> 00:31:50.528 a person is under a street lamp

NOTE Confidence: 0.910088664285714

00:31:50.528 --> 00:31:52.858 and is looking for the wallet,

NOTE Confidence: 0.910088664285714

00:31:52.860 --> 00:31:54.816 and the policeman comes and says,

NOTE Confidence: 0.910088664285714

00:31:54.820 --> 00:31:56.689 is this where you lost your wallet?

NOTE Confidence: 0.910088664285714

00:31:56.690 --> 00:31:57.950 And the person says no,

NOTE Confidence: 0.910088664285714

00:31:57.950 --> 00:31:59.126 I lost a bullet in the park,

NOTE Confidence: 0.910088664285714

00:31:59.130 --> 00:32:00.824 but this is where the light is,

NOTE Confidence: 0.910088664285714

00:32:00.830 --> 00:32:03.590 and so we tend to gravitate to

NOTE Confidence: 0.910088664285714

00:32:03.590 --> 00:32:05.870 things that are familiar to us.

NOTE Confidence: 0.910088664285714

00:32:05.870 --> 00:32:07.397 And so initially,

NOTE Confidence: 0.910088664285714

00:32:07.397 --> 00:32:11.470 what a lot of studies were using were

NOTE Confidence: 0.910088664285714

00:32:11.470 --> 00:32:15.961 the traditional cognitive testing.

NOTE Confidence: 0.910088664285714

00:32:15.961 --> 00:32:18.516 That or neuro psych testing,

NOTE Confidence: 0.910088664285714

00:32:18.520 --> 00:32:21.170 which is really only studying

NOTE Confidence: 0.910088664285714

00:32:21.170 --> 00:32:25.180 participants at one time point.

NOTE Confidence: 0.910088664285714  
00:32:25.180 --> 00:32:30.108 And also is using things like number back  
NOTE Confidence: 0.910088664285714  
00:32:30.108 --> 00:32:33.958 or which are relying more on attention?  
NOTE Confidence: 0.910088664285714  
00:32:33.960 --> 00:32:35.773 UM, so they are really if I  
NOTE Confidence: 0.910088664285714  
00:32:35.773 --> 00:32:37.530 hope you can see my cursor,  
NOTE Confidence: 0.910088664285714  
00:32:37.530 --> 00:32:39.665 they really just looking more  
NOTE Confidence: 0.910088664285714  
00:32:39.665 --> 00:32:41.800 into the short term memory.  
NOTE Confidence: 0.910088664285714  
00:32:41.800 --> 00:32:43.420 Of these participants,  
NOTE Confidence: 0.910088664285714  
00:32:43.420 --> 00:32:46.660 rather than the long term consolidation,  
NOTE Confidence: 0.910088664285714  
00:32:46.660 --> 00:32:48.460 which is where,  
NOTE Confidence: 0.910088664285714  
00:32:48.460 --> 00:32:49.060 wherever,  
NOTE Confidence: 0.910088664285714  
00:32:49.060 --> 00:32:52.060 whatever test on cognitive tests  
NOTE Confidence: 0.910088664285714  
00:32:52.060 --> 00:32:54.700 I used always say patients were  
NOTE Confidence: 0.910088664285714  
00:32:54.700 --> 00:32:56.240 impaired and showed impairment,  
NOTE Confidence: 0.910088664285714  
00:32:56.240 --> 00:32:59.030 and the reason if you only test them once  
NOTE Confidence: 0.910088664285714  
00:32:59.030 --> 00:33:02.365 I bring in this example from the REM group,  
NOTE Confidence: 0.910088664285714

00:33:02.370 --> 00:33:04.820 when we trained people in the evening,  
NOTE Confidence: 0.910088664285714

00:33:04.820 --> 00:33:07.064 we really didn't see a huge  
NOTE Confidence: 0.910088664285714

00:33:07.064 --> 00:33:08.560 difference in their performance,  
NOTE Confidence: 0.910088664285714

00:33:08.560 --> 00:33:11.056 so they were able to encode  
NOTE Confidence: 0.910088664285714

00:33:11.060 --> 00:33:12.284 this new task just.  
NOTE Confidence: 0.910088664285714

00:33:12.284 --> 00:33:12.590 Time,  
NOTE Confidence: 0.910088664285714

00:33:12.590 --> 00:33:14.921 but in the you really mainly see  
NOTE Confidence: 0.910088664285714

00:33:14.921 --> 00:33:16.994 the difference in in in performance  
NOTE Confidence: 0.910088664285714

00:33:16.994 --> 00:33:19.325 when you have them come back and  
NOTE Confidence: 0.910088664285714

00:33:19.400 --> 00:33:21.266 you test them a second time.  
NOTE Confidence: 0.910088664285714

00:33:21.270 --> 00:33:22.978 That's really when you see the difference.  
NOTE Confidence: 0.829773476

00:33:25.570 --> 00:33:29.480 So what a potential mechanisms very briefly?  
NOTE Confidence: 0.76068882

00:33:31.790 --> 00:33:36.800 In animal studies this is from.  
NOTE Confidence: 0.76068882

00:33:36.800 --> 00:33:38.088 Doctor Wilson at MIT.  
NOTE Confidence: 0.76068882

00:33:38.088 --> 00:33:40.020 This is an older study now,  
NOTE Confidence: 0.76068882

00:33:40.020 --> 00:33:42.680 but I think it's still very beautifully

NOTE Confidence: 0.76068882

00:33:42.680 --> 00:33:48.184 done when animals learn maze at the

NOTE Confidence: 0.76068882

00:33:48.184 --> 00:33:50.800 top here you can see firing in the

NOTE Confidence: 0.76068882

00:33:50.887 --> 00:33:53.680 temple area as they learn the maze

NOTE Confidence: 0.76068882

00:33:53.680 --> 00:33:56.519 to navigate the maze and when these

NOTE Confidence: 0.76068882

00:33:56.519 --> 00:33:58.922 animals go to sleep over striking

NOTE Confidence: 0.76068882

00:33:58.922 --> 00:34:01.869 is that you see the same firing

NOTE Confidence: 0.76068882

00:34:01.869 --> 00:34:03.790 patterns in the hippocampal area

NOTE Confidence: 0.76068882

00:34:03.790 --> 00:34:06.809 and that was a proof that there is.

NOTE Confidence: 0.76068882

00:34:06.810 --> 00:34:08.916 Reactivation of things that we learned

NOTE Confidence: 0.76068882

00:34:08.916 --> 00:34:11.637 during the day at night when we sleep.

NOTE Confidence: 0.76068882

00:34:11.640 --> 00:34:14.630 Now this is a lot harder to do in humans.

NOTE Confidence: 0.76068882

00:34:14.630 --> 00:34:17.663 But a study that came very close is again

NOTE Confidence: 0.76068882

00:34:17.663 --> 00:34:20.415 from Young Bones Group in in Germany,

NOTE Confidence: 0.76068882

00:34:20.420 --> 00:34:23.600 where they actually used smell to

NOTE Confidence: 0.76068882

00:34:23.600 --> 00:34:26.350 prove that memory gets reactivated.

NOTE Confidence: 0.76068882

00:34:26.350 --> 00:34:28.790 So I briefly want to go over this  
NOTE Confidence: 0.76068882

00:34:28.790 --> 00:34:31.130 because it's really a beautiful study.  
NOTE Confidence: 0.76068882

00:34:31.130 --> 00:34:34.994 So in here again is the the memory  
NOTE Confidence: 0.76068882

00:34:34.994 --> 00:34:37.711 of concentration game is used and  
NOTE Confidence: 0.76068882

00:34:37.711 --> 00:34:39.755 there are different experimental  
NOTE Confidence: 0.76068882

00:34:39.755 --> 00:34:42.790 conditions that you can see here.  
NOTE Confidence: 0.76068882

00:34:42.790 --> 00:34:44.362 So the first group.  
NOTE Confidence: 0.76068882

00:34:44.362 --> 00:34:46.720 When they learn this memory test,  
NOTE Confidence: 0.76068882

00:34:46.720 --> 00:34:50.572 they are exposed to a rose order.  
NOTE Confidence: 0.76068882

00:34:50.572 --> 00:34:54.420 Then the order is.  
NOTE Confidence: 0.76068882

00:34:54.420 --> 00:34:54.681 Again,  
NOTE Confidence: 0.76068882

00:34:54.681 --> 00:34:56.508 they exposed to the same order at  
NOTE Confidence: 0.76068882

00:34:56.508 --> 00:34:58.322 the beginning of the night when we  
NOTE Confidence: 0.76068882

00:34:58.322 --> 00:34:59.900 presumably have more slow wave sleep,  
NOTE Confidence: 0.76068882

00:34:59.900 --> 00:35:02.679 which is needed for this type of  
NOTE Confidence: 0.76068882

00:35:02.679 --> 00:35:04.080 memory consolidation and retrieval.

NOTE Confidence: 0.76068882

00:35:04.080 --> 00:35:05.280 They have no order.

NOTE Confidence: 0.76068882

00:35:05.280 --> 00:35:07.900 There's another group that doesn't

NOTE Confidence: 0.76068882

00:35:07.900 --> 00:35:10.418 receive order in the learning condition,

NOTE Confidence: 0.76068882

00:35:10.418 --> 00:35:12.620 but at night when they sleep

NOTE Confidence: 0.76068882

00:35:12.620 --> 00:35:15.170 during slow wave sleep again order

NOTE Confidence: 0.76068882

00:35:15.170 --> 00:35:17.680 and the big when they train,

NOTE Confidence: 0.76068882

00:35:17.680 --> 00:35:20.550 and then later during the night when

NOTE Confidence: 0.76068882

00:35:20.629 --> 00:35:23.254 they have more REM sleep and then.

NOTE Confidence: 0.76068882

00:35:23.260 --> 00:35:25.324 They receive an order when they learn it,

NOTE Confidence: 0.76068882

00:35:25.330 --> 00:35:28.130 and then right before they go to bed

NOTE Confidence: 0.76068882

00:35:28.130 --> 00:35:30.440 because there might be also a time

NOTE Confidence: 0.76068882

00:35:30.440 --> 00:35:33.054 when we saw when before we go to bed

NOTE Confidence: 0.76068882

00:35:33.054 --> 00:35:35.918 that we people think maybe there's

NOTE Confidence: 0.76068882

00:35:35.918 --> 00:35:38.206 some consolidation taking place

NOTE Confidence: 0.76068882

00:35:38.210 --> 00:35:40.958 and then no odor during retrieval.

NOTE Confidence: 0.76068882

00:35:40.960 --> 00:35:43.558 And the main finding is here.  
NOTE Confidence: 0.76068882

00:35:43.560 --> 00:35:46.552 On the left is that the people that  
NOTE Confidence: 0.76068882

00:35:46.552 --> 00:35:48.816 receive order when they learn this  
NOTE Confidence: 0.76068882

00:35:48.816 --> 00:35:51.537 task and during the early time of  
NOTE Confidence: 0.76068882

00:35:51.537 --> 00:35:54.134 sleep when they have slow wave sleep.  
NOTE Confidence: 0.76068882

00:35:54.140 --> 00:35:55.708 When we presumably consolidate  
NOTE Confidence: 0.76068882

00:35:55.708 --> 00:35:57.276 this type of memory,  
NOTE Confidence: 0.76068882

00:35:57.280 --> 00:36:00.220 they are performed a lot better  
NOTE Confidence: 0.76068882

00:36:00.220 --> 00:36:04.520 than all the other groups as.  
NOTE Confidence: 0.76068882

00:36:04.520 --> 00:36:05.639 It's only indirect,  
NOTE Confidence: 0.76068882

00:36:05.639 --> 00:36:08.742 but it's probably as good as it gets  
NOTE Confidence: 0.76068882

00:36:08.742 --> 00:36:12.022 in terms of showing that there is some  
NOTE Confidence: 0.76068882

00:36:12.022 --> 00:36:14.486 reactivation taking place when we sleep.  
NOTE Confidence: 0.9160021

00:36:16.780 --> 00:36:22.440 So now towards the last part I.  
NOTE Confidence: 0.9160021

00:36:22.440 --> 00:36:24.768 Not one to cover the link  
NOTE Confidence: 0.9160021

00:36:24.768 --> 00:36:26.320 between sleep and dementia,

NOTE Confidence: 0.9160021

00:36:26.320 --> 00:36:30.506 which has become a lot more popular.

NOTE Confidence: 0.601273595714286

00:36:32.660 --> 00:36:37.896 And. Uh. It's really one of the.

NOTE Confidence: 0.892466674166667

00:36:40.090 --> 00:36:43.432 In most interesting and I think

NOTE Confidence: 0.892466674166667

00:36:43.432 --> 00:36:46.660 also showing studies was done from

NOTE Confidence: 0.892466674166667

00:36:46.660 --> 00:36:49.570 Spirae where they looked at the

NOTE Confidence: 0.892466674166667

00:36:49.570 --> 00:36:51.510 association between self reported

NOTE Confidence: 0.892466674166667

00:36:51.510 --> 00:36:55.014 sleep and amyloid deposition,

NOTE Confidence: 0.892466674166667

00:36:55.014 --> 00:36:57.226 and this is fairly small.

NOTE Confidence: 0.892466674166667

00:36:57.226 --> 00:36:59.669 But on the left you have people

NOTE Confidence: 0.892466674166667

00:36:59.669 --> 00:37:01.847 who sleep more than 7 hours.

NOTE Confidence: 0.892466674166667

00:37:01.850 --> 00:37:03.800 Then you have people who sleep

NOTE Confidence: 0.892466674166667

00:37:03.800 --> 00:37:05.530 between 6:00 and seven hours,

NOTE Confidence: 0.892466674166667

00:37:05.530 --> 00:37:08.477 and then people who sleep less than

NOTE Confidence: 0.892466674166667

00:37:08.477 --> 00:37:11.120 six hours and more red means more

NOTE Confidence: 0.892466674166667

00:37:11.120 --> 00:37:13.631 amyloid and you can see very nicely

NOTE Confidence: 0.892466674166667

00:37:13.631 --> 00:37:16.190 is that people who sleep less tend  
NOTE Confidence: 0.892466674166667

00:37:16.190 --> 00:37:18.906 to have more amyloid. And this is.  
NOTE Confidence: 0.892466674166667

00:37:18.906 --> 00:37:21.618 But this is self reported sleep.  
NOTE Confidence: 0.892466674166667

00:37:21.620 --> 00:37:22.628 So that was one  
NOTE Confidence: 0.824412920909091

00:37:25.040 --> 00:37:28.608 really hot data proof that there is a  
NOTE Confidence: 0.824412920909091

00:37:28.608 --> 00:37:31.100 direct correlation between the amount  
NOTE Confidence: 0.824412920909091

00:37:31.100 --> 00:37:33.980 of sleep and and amyloid deposition.  
NOTE Confidence: 0.824412920909091

00:37:33.980 --> 00:37:36.380 Then a little bit later,  
NOTE Confidence: 0.824412920909091

00:37:36.380 --> 00:37:40.444 most of you might be familiar with her data.  
NOTE Confidence: 0.824412920909091

00:37:40.444 --> 00:37:44.496 Need a God showed very nicely  
NOTE Confidence: 0.824412920909091

00:37:44.496 --> 00:37:47.460 that when we go to sleep,  
NOTE Confidence: 0.824412920909091

00:37:47.460 --> 00:37:51.570 there is a change in how.  
NOTE Confidence: 0.824412920909091

00:37:51.570 --> 00:37:56.886 Come in the interstitial fluids and  
NOTE Confidence: 0.824412920909091

00:37:56.890 --> 00:37:59.571 they showed in in animals that amyloid  
NOTE Confidence: 0.824412920909091

00:37:59.571 --> 00:38:01.749 increase with the time of awake,  
NOTE Confidence: 0.824412920909091

00:38:01.750 --> 00:38:04.409 and then decrease during sleep and

NOTE Confidence: 0.824412920909091  
00:38:04.409 --> 00:38:06.804 that sleep really promotes the  
NOTE Confidence: 0.824412920909091  
00:38:06.804 --> 00:38:09.630 removal of amyloid from the brain,  
NOTE Confidence: 0.824412920909091  
00:38:09.630 --> 00:38:13.862 and the idea is that or the possibility  
NOTE Confidence: 0.824412920909091  
00:38:13.862 --> 00:38:16.291 is that maybe neurodegenerative disorders  
NOTE Confidence: 0.824412920909091  
00:38:16.291 --> 00:38:19.490 are the result of a MIS management  
NOTE Confidence: 0.824412920909091  
00:38:19.559 --> 00:38:21.979 of toxic molecules which accumulate.  
NOTE Confidence: 0.824412920909091  
00:38:21.980 --> 00:38:24.760 In the brain. This is still,  
NOTE Confidence: 0.824412920909091  
00:38:24.760 --> 00:38:26.636 you know, I have a hypothesis.  
NOTE Confidence: 0.824412920909091  
00:38:26.636 --> 00:38:28.670 I think some people think that  
NOTE Confidence: 0.824412920909091  
00:38:28.737 --> 00:38:30.195 this is the way it is.  
NOTE Confidence: 0.824412920909091  
00:38:30.200 --> 00:38:32.519 I think that.  
NOTE Confidence: 0.824412920909091  
00:38:32.520 --> 00:38:35.544 The challenge is that this shows  
NOTE Confidence: 0.824412920909091  
00:38:35.544 --> 00:38:37.571 things more amyloid leakage,  
NOTE Confidence: 0.824412920909091  
00:38:37.571 --> 00:38:41.031 and it's hard to say whether this  
NOTE Confidence: 0.824412920909091  
00:38:41.031 --> 00:38:43.086 truly means that we're those.  
NOTE Confidence: 0.879346954444445

00:38:45.340 --> 00:38:48.220 Animals, and now we also have  
NOTE Confidence: 0.879346954444445

00:38:48.220 --> 00:38:52.129 experiments with MRI by Laura Lewis.  
NOTE Confidence: 0.879346954444445

00:38:52.130 --> 00:38:56.085 In humans, whether it really means that  
NOTE Confidence: 0.879346954444445

00:38:56.090 --> 00:38:59.658 it leads to a long term accumulation of  
NOTE Confidence: 0.879346954444445

00:38:59.658 --> 00:39:02.855 amyloid and truly a higher risk of dementia.  
NOTE Confidence: 0.879346954444445

00:39:02.855 --> 00:39:06.006 So I think all of this is is very important  
NOTE Confidence: 0.879346954444445

00:39:06.006 --> 00:39:08.900 and very interesting, but it's still.  
NOTE Confidence: 0.879346954444445

00:39:08.900 --> 00:39:12.580 I think the link from this to long  
NOTE Confidence: 0.879346954444445

00:39:12.580 --> 00:39:15.760 term accumulation of amyloid and the  
NOTE Confidence: 0.879346954444445

00:39:15.760 --> 00:39:18.170 development of dementia is still,  
NOTE Confidence: 0.879346954444445

00:39:18.170 --> 00:39:19.794 you know, it's a it's a hypothesis.  
NOTE Confidence: 0.823335696

00:39:22.750 --> 00:39:25.960 The other important study is  
NOTE Confidence: 0.823335696

00:39:25.960 --> 00:39:28.228 looking at this is from at walkers.  
NOTE Confidence: 0.823335696

00:39:28.230 --> 00:39:33.285 Lab is showing that amilo  
NOTE Confidence: 0.823335696

00:39:33.285 --> 00:39:35.307 amyloid accumulation.  
NOTE Confidence: 0.823335696

00:39:35.310 --> 00:39:40.540 Is directly affecting memory consolidation,

NOTE Confidence: 0.823335696

00:39:40.540 --> 00:39:43.480 so here they had elderly people

NOTE Confidence: 0.823335696

00:39:43.480 --> 00:39:46.153 and they looked they localized

NOTE Confidence: 0.823335696

00:39:46.153 --> 00:39:49.794 amyloid which is very unusual in the

NOTE Confidence: 0.823335696

00:39:49.794 --> 00:39:51.516 temporal area and they showed that.

NOTE Confidence: 0.90441489

00:39:53.980 --> 00:39:56.600 This correlated with declarative

NOTE Confidence: 0.90441489

00:39:56.600 --> 00:39:57.910 memory consolidation.

NOTE Confidence: 0.90441489

00:39:57.910 --> 00:39:59.386 So when you had more amyloid,

NOTE Confidence: 0.90441489

00:39:59.390 --> 00:40:02.966 you didn't consolidate memories as well.

NOTE Confidence: 0.90441489

00:40:02.970 --> 00:40:06.234 They also went further and not only looked

NOTE Confidence: 0.90441489

00:40:06.234 --> 00:40:09.086 at sleep stages and slow wave in itself,

NOTE Confidence: 0.90441489

00:40:09.090 --> 00:40:12.978 but also at how slow wave

NOTE Confidence: 0.90441489

00:40:12.978 --> 00:40:15.570 sleep and spindles interact.

NOTE Confidence: 0.90441489

00:40:15.570 --> 00:40:19.007 As we look deeper into microstates of

NOTE Confidence: 0.90441489

00:40:19.007 --> 00:40:23.039 of sleep and beyond just sleep stages,

NOTE Confidence: 0.90441489

00:40:23.040 --> 00:40:24.567 we found that.

NOTE Confidence: 0.90441489

00:40:24.567 --> 00:40:28.130 In healthy people there is this nice.  
NOTE Confidence: 0.90441489

00:40:28.130 --> 00:40:29.312 Synchrony between slow  
NOTE Confidence: 0.90441489

00:40:29.312 --> 00:40:30.888 wave sleep and spindles,  
NOTE Confidence: 0.90441489

00:40:30.890 --> 00:40:32.426 and if they are perfectly aligned,  
NOTE Confidence: 0.90441489

00:40:32.430 --> 00:40:35.640 that seems to offer the best  
NOTE Confidence: 0.90441489

00:40:35.640 --> 00:40:37.960 benefit for affective memory  
NOTE Confidence: 0.90441489

00:40:37.960 --> 00:40:41.085 consolidation as people get older,  
NOTE Confidence: 0.90441489

00:40:41.090 --> 00:40:44.090 that relationship shifts a little bit,  
NOTE Confidence: 0.90441489

00:40:44.090 --> 00:40:46.050 just buy regular aging,  
NOTE Confidence: 0.90441489

00:40:46.050 --> 00:40:47.691 and then presumably,  
NOTE Confidence: 0.90441489

00:40:47.691 --> 00:40:50.996 if you have a neurocognitive  
NOTE Confidence: 0.90441489

00:40:51.000 --> 00:40:52.672 disorder such as dementia,  
NOTE Confidence: 0.90441489

00:40:52.672 --> 00:40:54.344 there's even further shift.  
NOTE Confidence: 0.952630443333333

00:40:56.530 --> 00:40:58.654 So those are different  
NOTE Confidence: 0.952630443333333

00:40:58.654 --> 00:41:01.309 mechanisms that seem to affect.  
NOTE Confidence: 0.952630443333333

00:41:01.310 --> 00:41:04.058 Sleep and memory consolidation.

NOTE Confidence: 0.85633916

00:41:10.360 --> 00:41:14.065 So earlier studies that I've showed

NOTE Confidence: 0.85633916

00:41:14.065 --> 00:41:16.030 have mainly focused on amyloid

NOTE Confidence: 0.85633916

00:41:16.096 --> 00:41:20.519 because that was available to us and.

NOTE Confidence: 0.85633916

00:41:20.520 --> 00:41:23.768 A lot of people believe more that

NOTE Confidence: 0.85633916

00:41:23.768 --> 00:41:26.990 amyloid is really the most important.

NOTE Confidence: 0.85633916

00:41:26.990 --> 00:41:29.306 A protein that was the driver.

NOTE Confidence: 0.85633916

00:41:29.310 --> 00:41:32.306 I think there's a big shift that we

NOTE Confidence: 0.85633916

00:41:32.306 --> 00:41:35.930 now think that Tao and Larry tangles

NOTE Confidence: 0.85633916

00:41:35.930 --> 00:41:39.620 have received a lot more attention.

NOTE Confidence: 0.85633916

00:41:39.620 --> 00:41:42.525 What I want to make clear that

NOTE Confidence: 0.85633916

00:41:42.525 --> 00:41:44.755 everybody understands is that when

NOTE Confidence: 0.85633916

00:41:44.755 --> 00:41:47.020 we talk about clinical dementia,

NOTE Confidence: 0.85633916

00:41:47.020 --> 00:41:49.386 that's the time point that is fairly

NOTE Confidence: 0.85633916

00:41:49.386 --> 00:41:51.740 at the end of this trajectory.

NOTE Confidence: 0.85633916

00:41:51.740 --> 00:41:55.540 The process itself often starts

NOTE Confidence: 0.85633916

00:41:55.540 --> 00:41:59.660 decades before the clinical symptoms,  
NOTE Confidence: 0.85633916

00:41:59.660 --> 00:42:02.362 and so there is a gradual increase  
NOTE Confidence: 0.85633916

00:42:02.362 --> 00:42:04.181 in amyloid, but also Tau.  
NOTE Confidence: 0.85633916

00:42:04.181 --> 00:42:06.981 We now think that Tau might actually be  
NOTE Confidence: 0.85633916

00:42:06.981 --> 00:42:09.946 driving a lot more of of the changes.  
NOTE Confidence: 0.85633916

00:42:09.946 --> 00:42:13.640 Tao is also much easier to localize,  
NOTE Confidence: 0.85633916

00:42:13.640 --> 00:42:15.980 and there are different Brooks stages,  
NOTE Confidence: 0.85633916

00:42:15.980 --> 00:42:21.730 and it has different dynamics, that's why.  
NOTE Confidence: 0.85633916

00:42:21.730 --> 00:42:25.258 Uhm? Myself and Jasmine are at chat.  
NOTE Confidence: 0.85633916

00:42:25.260 --> 00:42:28.710 Well, we have a grant together  
NOTE Confidence: 0.85633916

00:42:28.710 --> 00:42:33.500 looking at Tao up in PET scans,  
NOTE Confidence: 0.85633916

00:42:33.500 --> 00:42:35.445 which is something that became  
NOTE Confidence: 0.85633916

00:42:35.445 --> 00:42:37.870 available over the last few years.  
NOTE Confidence: 0.85633916

00:42:37.870 --> 00:42:41.888 And we were interested in looking at  
NOTE Confidence: 0.85633916

00:42:41.888 --> 00:42:45.628 early Tau changes in older patients,  
NOTE Confidence: 0.85633916

00:42:45.630 --> 00:42:49.325 and to correlate that with their

NOTE Confidence: 0.85633916

00:42:49.325 --> 00:42:51.730 sleep to see if there's any.

NOTE Confidence: 0.85633916

00:42:51.730 --> 00:42:53.586 If there's anything there.

NOTE Confidence: 0.85633916

00:42:53.586 --> 00:42:57.966 And So what we found is this is a

NOTE Confidence: 0.85633916

00:42:57.966 --> 00:43:01.830 fairly fresh data, unpublished.

NOTE Confidence: 0.85633916

00:43:01.830 --> 00:43:04.194 This is from participants of the

NOTE Confidence: 0.85633916

00:43:04.194 --> 00:43:06.648 habit aging brain study which is

NOTE Confidence: 0.85633916

00:43:06.648 --> 00:43:08.658 a longitudinal study looking at

NOTE Confidence: 0.85633916

00:43:08.660 --> 00:43:11.580 healthy aging and its control.

NOTE Confidence: 0.85633916

00:43:11.580 --> 00:43:14.532 People have regular repeated

NOTE Confidence: 0.85633916

00:43:14.532 --> 00:43:16.539 scans and cognitive testing,

NOTE Confidence: 0.85633916

00:43:16.539 --> 00:43:20.452 and we added a home sleep studies for PSG's.

NOTE Confidence: 0.85633916

00:43:20.452 --> 00:43:23.308 And what we've found is that

NOTE Confidence: 0.85633916

00:43:23.308 --> 00:43:26.147 in areas that are early on,

NOTE Confidence: 0.85633916

00:43:26.150 --> 00:43:27.359 affected in dementia,

NOTE Confidence: 0.85633916

00:43:27.359 --> 00:43:29.374 which is the enter rhinal

NOTE Confidence: 0.85633916

00:43:29.374 --> 00:43:31.119 and inferior temporal Tau,  
NOTE Confidence: 0.85633916

00:43:31.120 --> 00:43:34.303 there is a correlation between increased  
NOTE Confidence: 0.85633916

00:43:34.303 --> 00:43:38.567 Tau and the amount of slow wave sleep.  
NOTE Confidence: 0.85633916

00:43:38.570 --> 00:43:39.260 And this.  
NOTE Confidence: 0.805119166666667

00:43:41.580 --> 00:43:45.090 Is also 8. Remains even  
NOTE Confidence: 0.805119166666667

00:43:45.090 --> 00:43:47.015 when you control for age,  
NOTE Confidence: 0.805119166666667

00:43:47.020 --> 00:43:50.440 so that's very solid.  
NOTE Confidence: 0.805119166666667

00:43:50.440 --> 00:43:54.164 It doesn't depend on the amyloid burden,  
NOTE Confidence: 0.805119166666667

00:43:54.170 --> 00:43:57.300 so this is completely independent  
NOTE Confidence: 0.805119166666667

00:43:57.300 --> 00:44:01.799 of how much amyloid a person has,  
NOTE Confidence: 0.805119166666667

00:44:01.800 --> 00:44:03.678 so it's not an additional effect.  
NOTE Confidence: 0.805119166666667

00:44:03.680 --> 00:44:07.719 So Tau seems to have its own  
NOTE Confidence: 0.805119166666667

00:44:07.719 --> 00:44:10.739 mechanism on and effect on  
NOTE Confidence: 0.805119166666667

00:44:10.740 --> 00:44:13.410 slow wave slow wave modulation.  
NOTE Confidence: 0.945042242222222

00:44:18.680 --> 00:44:22.360 And finally, I also want to point out  
NOTE Confidence: 0.945042242222222

00:44:22.360 --> 00:44:26.188 that we saw that less REM sleep was also

NOTE Confidence: 0.9450422422222222  
00:44:26.188 --> 00:44:28.970 associated with Greater Talbert and one  
NOTE Confidence: 0.9450422422222222  
00:44:28.970 --> 00:44:31.490 of the points that I would like to make  
NOTE Confidence: 0.9450422422222222  
00:44:31.559 --> 00:44:34.023 is that people often hyperfocus on slow  
NOTE Confidence: 0.9450422422222222  
00:44:34.023 --> 00:44:36.450 wave sleep and and and delta waves,  
NOTE Confidence: 0.9450422422222222  
00:44:36.450 --> 00:44:39.394 and if we can only restore delta waves,  
NOTE Confidence: 0.9450422422222222  
00:44:39.400 --> 00:44:41.500 people will be cognitively intact.  
NOTE Confidence: 0.9450422422222222  
00:44:41.500 --> 00:44:43.018 I don't think it's that simple.  
NOTE Confidence: 0.9450422422222222  
00:44:43.020 --> 00:44:46.172 I think there's many studies that have now  
NOTE Confidence: 0.9450422422222222  
00:44:46.172 --> 00:44:48.828 shown not just our results, but others.  
NOTE Confidence: 0.9450422422222222  
00:44:48.828 --> 00:44:51.834 That REM sleep also seems to play an  
NOTE Confidence: 0.9450422422222222  
00:44:51.834 --> 00:44:54.804 important role and seems to decrease in  
NOTE Confidence: 0.9450422422222222  
00:44:54.804 --> 00:44:57.839 the setting of cognitive impairment.  
NOTE Confidence: 0.91644327375  
00:45:00.790 --> 00:45:05.564 So in the end, it's really becoming  
NOTE Confidence: 0.91644327375  
00:45:05.564 --> 00:45:11.986 a mix of factors that weight into.  
NOTE Confidence: 0.91644327375  
00:45:11.990 --> 00:45:13.760 Sleep and cognition.  
NOTE Confidence: 0.91644327375

00:45:13.760 --> 00:45:18.383 And if we stop with sleep fragmentation from

NOTE Confidence: 0.91644327375

00:45:18.383 --> 00:45:23.100 our say we saw that it changes cognition.

NOTE Confidence: 0.91644327375

00:45:23.100 --> 00:45:25.130 Doesn't change, doesn't make a

NOTE Confidence: 0.91644327375

00:45:25.130 --> 00:45:27.160 person more susceptible to dementia.

NOTE Confidence: 0.91644327375

00:45:27.160 --> 00:45:30.120 That's very difficult to say.

NOTE Confidence: 0.91644327375

00:45:30.120 --> 00:45:33.137 There are some studies that suggest that,

NOTE Confidence: 0.91644327375

00:45:33.140 --> 00:45:35.884 but I think there are also a lot

NOTE Confidence: 0.91644327375

00:45:35.884 --> 00:45:38.400 of people with severe OSA who

NOTE Confidence: 0.91644327375

00:45:38.400 --> 00:45:40.136 not everybody becomes demented,

NOTE Confidence: 0.91644327375

00:45:40.140 --> 00:45:43.020 so they're obviously other factors

NOTE Confidence: 0.91644327375

00:45:43.020 --> 00:45:45.324 that play a role.

NOTE Confidence: 0.91644327375

00:45:45.330 --> 00:45:47.850 The accumulation of amyloid and Tau in

NOTE Confidence: 0.91644327375

00:45:47.850 --> 00:45:50.830 itself can cause further sleep fragmentation,

NOTE Confidence: 0.91644327375

00:45:50.830 --> 00:45:54.676 and so it becomes suspicious cycle.

NOTE Confidence: 0.91644327375

00:45:54.680 --> 00:45:58.690 1. Last aspect that I want to talk

NOTE Confidence: 0.91644327375

00:45:58.690 --> 00:46:00.919 about is as the AP Epsilon E4,

NOTE Confidence: 0.91644327375

00:46:00.920 --> 00:46:02.978 which is a risk factor for as

NOTE Confidence: 0.91644327375

00:46:02.978 --> 00:46:04.850 many of you know, for dementia.

NOTE Confidence: 0.91644327375

00:46:04.850 --> 00:46:06.530 So if you have one allele,

NOTE Confidence: 0.91644327375

00:46:06.530 --> 00:46:08.150 you have a higher risk if you have two

NOTE Confidence: 0.91644327375

00:46:08.150 --> 00:46:11.320 alleles, you have even higher risk.

NOTE Confidence: 0.91644327375

00:46:11.320 --> 00:46:14.840 Many studies have shown that if you have.

NOTE Confidence: 0.91644327375

00:46:14.840 --> 00:46:16.796 If you're at a point you've

NOTE Confidence: 0.91644327375

00:46:16.796 --> 00:46:18.100 carrier and for carrier,

NOTE Confidence: 0.91644327375

00:46:18.100 --> 00:46:19.228 and you have OSA,

NOTE Confidence: 0.91644327375

00:46:19.228 --> 00:46:20.920 you have much higher risk for

NOTE Confidence: 0.91644327375

00:46:20.980 --> 00:46:23.570 having cognitive problems or have

NOTE Confidence: 0.91644327375

00:46:23.570 --> 00:46:25.750 more pronounced cognitive problems.

NOTE Confidence: 0.91644327375

00:46:25.750 --> 00:46:29.140 Well, this is also unpublished data,

NOTE Confidence: 0.91644327375

00:46:29.140 --> 00:46:32.380 although I showed it at the last week

NOTE Confidence: 0.91644327375

00:46:32.380 --> 00:46:35.129 meeting is that we look at young,

NOTE Confidence: 0.91644327375

00:46:35.130 --> 00:46:39.090 healthy participants.  
NOTE Confidence: 0.91644327375

00:46:39.090 --> 00:46:41.120 They were tested with Wechsler  
NOTE Confidence: 0.91644327375

00:46:41.120 --> 00:46:44.281 tests so they were they had no  
NOTE Confidence: 0.91644327375

00:46:44.281 --> 00:46:46.385 subjective and objective cognitive.  
NOTE Confidence: 0.91644327375

00:46:46.390 --> 00:46:50.430 Problems we had a group of April E4  
NOTE Confidence: 0.91644327375

00:46:50.430 --> 00:46:54.070 carriers and a group of non carriers.  
NOTE Confidence: 0.91644327375

00:46:54.070 --> 00:46:57.198 We have them all to do the declarative  
NOTE Confidence: 0.91644327375

00:46:57.198 --> 00:47:01.520 memory test and the input for carriers  
NOTE Confidence: 0.91644327375

00:47:01.520 --> 00:47:04.845 also showed far less overnight memory  
NOTE Confidence: 0.91644327375

00:47:04.845 --> 00:47:07.460 consolidation compared to the healthy,  
NOTE Confidence: 0.91644327375

00:47:07.460 --> 00:47:09.443 healthy non carious.  
NOTE Confidence: 0.91644327375

00:47:09.443 --> 00:47:13.265 And the April 4 carriers actually  
NOTE Confidence: 0.91644327375

00:47:13.265 --> 00:47:17.385 show at the same level as the OSA  
NOTE Confidence: 0.91644327375

00:47:17.385 --> 00:47:20.400 patients and this just speaks again,  
NOTE Confidence: 0.91644327375

00:47:20.400 --> 00:47:22.210 unfortunately to the fact that.  
NOTE Confidence: 0.831894767857143

00:47:24.300 --> 00:47:25.551 Cognitive decline people

NOTE Confidence: 0.831894767857143  
00:47:25.551 --> 00:47:28.053 usually use the analogy of the  
NOTE Confidence: 0.831894767857143  
00:47:28.053 --> 00:47:29.927 iceberg starts very early on.  
NOTE Confidence: 0.831894767857143  
00:47:29.930 --> 00:47:32.306 It's very subtle, but that might  
NOTE Confidence: 0.831894767857143  
00:47:32.306 --> 00:47:34.349 actually be the very vulnerable  
NOTE Confidence: 0.831894767857143  
00:47:34.349 --> 00:47:37.030 time when we might be able to.  
NOTE Confidence: 0.925046552  
00:47:39.480 --> 00:47:41.432 Provide treatment for these  
NOTE Confidence: 0.925046552  
00:47:41.432 --> 00:47:43.650 people because a lot of times.  
NOTE Confidence: 0.86592446  
00:47:46.100 --> 00:47:48.850 Once clinical symptoms starts and  
NOTE Confidence: 0.86592446  
00:47:48.850 --> 00:47:51.496 we have seen it in the clinic,  
NOTE Confidence: 0.86592446  
00:47:51.500 --> 00:47:52.784 you cannot reverse dementia.  
NOTE Confidence: 0.86592446  
00:47:52.784 --> 00:47:55.290 You can improve some of the symptoms.  
NOTE Confidence: 0.86592446  
00:47:55.290 --> 00:47:58.405 Some of the attention if you have  
NOTE Confidence: 0.86592446  
00:47:58.405 --> 00:48:01.167 somebody with dementia who also has OSA.  
NOTE Confidence: 0.86592446  
00:48:01.170 --> 00:48:03.360 I might put temporarily be  
NOTE Confidence: 0.86592446  
00:48:03.360 --> 00:48:05.550 a little bit more alert,  
NOTE Confidence: 0.86592446

00:48:05.550 --> 00:48:07.850 but you really can't reverse  
NOTE Confidence: 0.86592446

00:48:07.850 --> 00:48:10.210 the the the trip trajectory,  
NOTE Confidence: 0.86592446

00:48:10.210 --> 00:48:13.708 so it's probably a matter of timing and and  
NOTE Confidence: 0.86592446

00:48:13.708 --> 00:48:16.972 the kind of treatment that we can provide,  
NOTE Confidence: 0.86592446

00:48:16.972 --> 00:48:19.744 but there's definitely a strong correlation  
NOTE Confidence: 0.86592446

00:48:19.744 --> 00:48:22.989 between sleep and and cognition and dementia,  
NOTE Confidence: 0.86592446

00:48:22.990 --> 00:48:24.922 hopefully with better biomarkers.  
NOTE Confidence: 0.86592446

00:48:24.922 --> 00:48:28.838 We can determine who is at higher risk  
NOTE Confidence: 0.86592446

00:48:28.838 --> 00:48:32.093 and and then treatment to be determined.  
NOTE Confidence: 0.86592446

00:48:32.100 --> 00:48:35.620 So ending with Christoph Niemann,  
NOTE Confidence: 0.86592446

00:48:35.620 --> 00:48:39.810 who's a did, a list of goodnight and  
NOTE Confidence: 0.86592446

00:48:39.810 --> 00:48:44.000 a list of drawings for The New Yorker.  
NOTE Confidence: 0.86592446

00:48:44.000 --> 00:48:46.544 But goodnight and good luck getting a  
NOTE Confidence: 0.86592446

00:48:46.544 --> 00:48:48.798 good night's sleep is actually a lot  
NOTE Confidence: 0.86592446

00:48:48.798 --> 00:48:51.138 more complicated than what we think.  
NOTE Confidence: 0.86592446

00:48:51.140 --> 00:48:51.630 Thank you.

NOTE Confidence: 0.846374405

00:48:59.050 --> 00:49:00.145 Doctor John logic.

NOTE Confidence: 0.846374405

00:49:00.145 --> 00:49:03.017 Thank you very much for reviewing

NOTE Confidence: 0.846374405

00:49:03.017 --> 00:49:06.158 that fascinating presentation.

NOTE Confidence: 0.846374405

00:49:06.160 --> 00:49:08.010 If folks can submit questions

NOTE Confidence: 0.846374405

00:49:08.010 --> 00:49:11.832 into the chat, we can help plan.

NOTE Confidence: 0.846374405

00:49:11.832 --> 00:49:14.646 Moderate this Aahe and

NOTE Confidence: 0.846374405

00:49:14.646 --> 00:49:18.286 Stuart men just posted one.

NOTE Confidence: 0.846374405

00:49:18.290 --> 00:49:20.385 Do patients with longstanding by

NOTE Confidence: 0.846374405

00:49:20.385 --> 00:49:22.480 history untreated OSA have higher

NOTE Confidence: 0.846374405

00:49:22.553 --> 00:49:24.779 beta amyloid levels in their brain?

NOTE Confidence: 0.817227956666667

00:49:26.740 --> 00:49:28.366 That's a question we don't I?

NOTE Confidence: 0.817227956666667

00:49:28.370 --> 00:49:30.640 I mean I would love.

NOTE Confidence: 0.817227956666667

00:49:30.640 --> 00:49:33.100 Uhm, that's that's \$1,000,000 question.

NOTE Confidence: 0.817227956666667

00:49:33.100 --> 00:49:37.480 I think that there's no way to trace back

NOTE Confidence: 0.817227956666667

00:49:37.480 --> 00:49:41.219 when OSA started and and how severe it was.

NOTE Confidence: 0.817227956666667

00:49:41.220 --> 00:49:43.056 It's sort of a gradual process.  
NOTE Confidence: 0.817227956666667

00:49:43.060 --> 00:49:45.928 I think there are.  
NOTE Confidence: 0.817227956666667

00:49:45.930 --> 00:49:47.868 On on maybe some prospective studies  
NOTE Confidence: 0.817227956666667

00:49:47.868 --> 00:49:49.849 that are starting to look at it,  
NOTE Confidence: 0.817227956666667

00:49:49.850 --> 00:49:53.340 but I think for now we don't have an answer.  
NOTE Confidence: 0.817227956666667

00:49:53.340 --> 00:49:56.940 I'm not necessarily sure that  
NOTE Confidence: 0.817227956666667

00:49:56.940 --> 00:49:59.088 it's just a matter of time.  
NOTE Confidence: 0.817227956666667

00:49:59.090 --> 00:50:01.738 I think there are other factors that it's,  
NOTE Confidence: 0.817227956666667

00:50:01.740 --> 00:50:05.188 I think the person's ability to deal with  
NOTE Confidence: 0.817227956666667

00:50:05.188 --> 00:50:08.380 OSA and itself that also plays a big role.  
NOTE Confidence: 0.817227956666667

00:50:08.380 --> 00:50:10.370 The ability to generate slow  
NOTE Confidence: 0.817227956666667

00:50:10.370 --> 00:50:12.360 wave sleep despite having OSA,  
NOTE Confidence: 0.817227956666667

00:50:12.360 --> 00:50:15.870 you see that in some participants.  
NOTE Confidence: 0.817227956666667

00:50:15.870 --> 00:50:16.508 We also,  
NOTE Confidence: 0.817227956666667

00:50:16.508 --> 00:50:19.629 you know we have people in our group of hot.  
NOTE Confidence: 0.817227956666667

00:50:19.630 --> 00:50:22.612 The habit aging brain study who in

NOTE Confidence: 0.817227956666667  
00:50:22.612 --> 00:50:25.484 the 80s and 90s now and and they get  
NOTE Confidence: 0.817227956666667  
00:50:25.484 --> 00:50:27.010 their first sleep study in their life.  
NOTE Confidence: 0.817227956666667  
00:50:27.010 --> 00:50:28.238 They have no symptoms.  
NOTE Confidence: 0.817227956666667  
00:50:28.238 --> 00:50:29.466 They have no sleepiness.  
NOTE Confidence: 0.817227956666667  
00:50:29.470 --> 00:50:32.962 They are fine and I think it's and they  
NOTE Confidence: 0.817227956666667  
00:50:32.962 --> 00:50:35.470 probably had it for for a really long time.  
NOTE Confidence: 0.817227956666667  
00:50:35.470 --> 00:50:37.774 So I think it's I'm not sure if  
NOTE Confidence: 0.817227956666667  
00:50:37.774 --> 00:50:40.348 it's a it's a time effect as much  
NOTE Confidence: 0.817227956666667  
00:50:40.348 --> 00:50:42.273 as it's the cognitive reserve or  
NOTE Confidence: 0.817227956666667  
00:50:42.273 --> 00:50:44.199 the ability the way the brain  
NOTE Confidence: 0.817227956666667  
00:50:44.199 --> 00:50:45.900 deals with sleep deprivation.  
NOTE Confidence: 0.817227956666667  
00:50:45.900 --> 00:50:46.970 Skip fragmentation.  
NOTE Confidence: 0.88526159375  
00:50:50.070 --> 00:50:52.126 Wonderful and a couple more popping up here.  
NOTE Confidence: 0.88526159375  
00:50:52.130 --> 00:50:53.266 Doctor Gary is asked,  
NOTE Confidence: 0.88526159375  
00:50:53.266 --> 00:50:55.348 do you think the lack of improvement  
NOTE Confidence: 0.88526159375

00:50:55.348 --> 00:50:57.820 in memory after one night of C PAP  
NOTE Confidence: 0.88526159375

00:50:57.820 --> 00:51:00.422 use was related to the potential sleep  
NOTE Confidence: 0.88526159375

00:51:00.422 --> 00:51:04.274 disruption from the first night of PAP use?  
NOTE Confidence: 0.88526159375

00:51:04.274 --> 00:51:07.182 Could it? That I could see Pap actually  
NOTE Confidence: 0.88526159375

00:51:07.182 --> 00:51:09.011 worse than some elements of sleep  
NOTE Confidence: 0.88526159375

00:51:09.011 --> 00:51:10.576 because patients were not yet  
NOTE Confidence: 0.88526159375

00:51:10.576 --> 00:51:12.320 customized to sleeping with the mask.  
NOTE Confidence: 0.865010083333333

00:51:13.160 --> 00:51:15.140 But if it did, it wasn't.  
NOTE Confidence: 0.865010083333333

00:51:15.140 --> 00:51:16.664 We didn't measure it,  
NOTE Confidence: 0.865010083333333

00:51:16.664 --> 00:51:19.460 they didn't have a high arousal index.  
NOTE Confidence: 0.865010083333333

00:51:19.460 --> 00:51:21.497 It is possible that there was some  
NOTE Confidence: 0.865010083333333

00:51:21.497 --> 00:51:23.319 things that we didn't measure,  
NOTE Confidence: 0.865010083333333

00:51:23.320 --> 00:51:25.630 but I think at least from the.  
NOTE Confidence: 0.761463686

00:51:27.700 --> 00:51:31.258 Looking at, I actually did look  
NOTE Confidence: 0.761463686

00:51:31.258 --> 00:51:34.810 at sleep spindles to come and  
NOTE Confidence: 0.761463686

00:51:34.810 --> 00:51:37.455 they didn't seem to recover,

NOTE Confidence: 0.761463686

00:51:37.455 --> 00:51:41.575 so it could be that there my my

NOTE Confidence: 0.761463686

00:51:41.580 --> 00:51:44.664 more thinking that there are deep

NOTE Confidence: 0.761463686

00:51:44.664 --> 00:51:48.202 structural changes that don't recover

NOTE Confidence: 0.761463686

00:51:48.202 --> 00:51:51.005 overnight rather than that there was

NOTE Confidence: 0.761463686

00:51:51.005 --> 00:51:53.510 the CPAP or the treatment imposing.

NOTE Confidence: 0.665662716

00:51:56.200 --> 00:51:59.640 Fragmentation or or some some.

NOTE Confidence: 0.665662716

00:51:59.640 --> 00:52:01.220 Affecting the quality of sleep.

NOTE Confidence: 0.821072669285714

00:52:04.870 --> 00:52:06.748 Doctor Yagi asks do you think

NOTE Confidence: 0.821072669285714

00:52:06.748 --> 00:52:08.000 sleep effects are potentially

NOTE Confidence: 0.821072669285714

00:52:08.053 --> 00:52:09.749 limited to Alzheimer's dementia?

NOTE Confidence: 0.821072669285714

00:52:09.750 --> 00:52:11.422 Or could it be playing a role in

NOTE Confidence: 0.821072669285714

00:52:11.422 --> 00:52:13.014 other forms of dementia like Blue

NOTE Confidence: 0.821072669285714

00:52:13.014 --> 00:52:14.414 Lewy body or vascular dementia?

NOTE Confidence: 0.893169010625

00:52:16.620 --> 00:52:19.203 I think it has the potential to play a

NOTE Confidence: 0.893169010625

00:52:19.203 --> 00:52:21.635 role in in other dimensions as well.

NOTE Confidence: 0.893169010625

00:52:21.640 --> 00:52:23.776 I mean, we know that many dimensions does

NOTE Confidence: 0.893169010625

00:52:23.776 --> 00:52:25.838 also have from run behavior disorders.

NOTE Confidence: 0.893169010625

00:52:25.840 --> 00:52:32.060 To sleep is definitely affected. And.

NOTE Confidence: 0.893169010625

00:52:32.060 --> 00:52:35.552 The question is how much of it it how?

NOTE Confidence: 0.893169010625

00:52:35.560 --> 00:52:38.927 Is it? Is it parallel other because

NOTE Confidence: 0.893169010625

00:52:38.927 --> 00:52:41.717 sleep and memory use the same

NOTE Confidence: 0.893169010625

00:52:41.717 --> 00:52:45.170 networks and so could it be part of

NOTE Confidence: 0.893169010625

00:52:45.170 --> 00:52:48.250 the same decline of a network that?

NOTE Confidence: 0.893169010625

00:52:48.250 --> 00:52:50.497 Changes sleep and memory in parallel or

NOTE Confidence: 0.893169010625

00:52:50.497 --> 00:52:53.290 is are they interfering with each other?

NOTE Confidence: 0.893169010625

00:52:53.290 --> 00:52:55.215 So that's I think the big question

NOTE Confidence: 0.893169010625

00:52:55.215 --> 00:52:57.059 that is not really answered.

NOTE Confidence: 0.893169010625

00:52:57.060 --> 00:52:58.764 We're hoping that with this study

NOTE Confidence: 0.893169010625

00:52:58.764 --> 00:53:00.605 that we're doing right now where

NOTE Confidence: 0.893169010625

00:53:00.605 --> 00:53:02.585 we actually follow participant

NOTE Confidence: 0.893169010625

00:53:02.585 --> 00:53:04.565 longitudinally with their sleep,

NOTE Confidence: 0.893169010625

00:53:04.570 --> 00:53:06.730 so they have consecutive sleep

NOTE Confidence: 0.893169010625

00:53:06.730 --> 00:53:09.458 studies and imaging that we can see.

NOTE Confidence: 0.893169010625

00:53:09.458 --> 00:53:11.243 Maybe what is driving what,

NOTE Confidence: 0.893169010625

00:53:11.250 --> 00:53:12.612 but I think it's difficult to

NOTE Confidence: 0.893169010625

00:53:12.612 --> 00:53:13.520 tell at this time.

NOTE Confidence: 0.893776359444445

00:53:16.170 --> 00:53:18.949 And Stuart man asks, can you further

NOTE Confidence: 0.893776359444445

00:53:18.949 --> 00:53:21.384 discuss the relationship of slow wave

NOTE Confidence: 0.893776359444445

00:53:21.384 --> 00:53:23.339 sleep and spindle interact actions?

NOTE Confidence: 0.889153782

00:53:24.680 --> 00:53:26.828 Yeah, so they are.

NOTE Confidence: 0.889153782

00:53:26.828 --> 00:53:29.513 Basically it's it's mostly slow

NOTE Confidence: 0.889153782

00:53:29.513 --> 00:53:32.262 oscillation that come from the cortex

NOTE Confidence: 0.889153782

00:53:32.262 --> 00:53:35.478 that occur in the same. You know,

NOTE Confidence: 0.889153782

00:53:35.478 --> 00:53:38.907 in a certain timeliness with spindles.

NOTE Confidence: 0.889153782

00:53:38.907 --> 00:53:43.100 So there is that's this is called.

NOTE Confidence: 0.889153782

00:53:43.100 --> 00:53:46.412 Oscillation spindle coupling and they seem

NOTE Confidence: 0.889153782

00:53:46.412 --> 00:53:51.240 to if you have good memory consolidation,  
NOTE Confidence: 0.889153782

00:53:51.240 --> 00:53:54.270 you usually have good coupling.  
NOTE Confidence: 0.889153782

00:53:54.270 --> 00:53:58.380 It's it's a, I think a a mirror of how  
NOTE Confidence: 0.889153782

00:53:58.492 --> 00:54:01.820 well your brain is consolidating these.  
NOTE Confidence: 0.889153782

00:54:01.820 --> 00:54:03.200 It's functioning.  
NOTE Confidence: 0.889153782

00:54:03.200 --> 00:54:08.369 And as people get older just by aging,  
NOTE Confidence: 0.889153782

00:54:08.370 --> 00:54:11.340 this coupling changes and and so  
NOTE Confidence: 0.889153782

00:54:11.340 --> 00:54:13.670 it becomes less connected and  
NOTE Confidence: 0.889153782

00:54:13.670 --> 00:54:16.899 we think that it it falls apart.  
NOTE Confidence: 0.889153782

00:54:16.899 --> 00:54:20.960 This is 1 aspect of what might  
NOTE Confidence: 0.889153782

00:54:20.960 --> 00:54:23.739 interfere with. Sleep and memory.  
NOTE Confidence: 0.889153782

00:54:23.739 --> 00:54:24.678 Like I said,  
NOTE Confidence: 0.889153782

00:54:24.680 --> 00:54:26.752 I think if we just focus on on  
NOTE Confidence: 0.889153782

00:54:26.752 --> 00:54:28.598 too much on slow it's sleep.  
NOTE Confidence: 0.889153782

00:54:28.600 --> 00:54:30.408 We actually lose track.  
NOTE Confidence: 0.889153782

00:54:30.408 --> 00:54:34.010 That REM sleep is also very important

NOTE Confidence: 0.889153782

00:54:34.010 --> 00:54:36.400 and often gets overlooked unfortunately.

NOTE Confidence: 0.898981014

00:54:40.610 --> 00:54:43.785 And then I will ask if N3 sleep

NOTE Confidence: 0.898981014

00:54:43.785 --> 00:54:45.565 is critical for recovery.

NOTE Confidence: 0.898981014

00:54:45.570 --> 00:54:46.650 Although as you mentioned,

NOTE Confidence: 0.898981014

00:54:46.650 --> 00:54:47.730 not the whole story.

NOTE Confidence: 0.898981014

00:54:47.730 --> 00:54:50.026 Given that it naturally diminishes with age,

NOTE Confidence: 0.898981014

00:54:50.030 --> 00:54:51.656 do you think there's a potential

NOTE Confidence: 0.898981014

00:54:51.656 --> 00:54:53.494 that the recovery and learning that

NOTE Confidence: 0.898981014

00:54:53.494 --> 00:54:55.600 you can generate with CPAP therapy

NOTE Confidence: 0.898981014

00:54:55.600 --> 00:54:56.810 diminishes inherently with age?

NOTE Confidence: 0.76142601

00:54:58.490 --> 00:55:01.416 Your ability to recover diminishes with age.

NOTE Confidence: 0.728760331428571

00:55:02.480 --> 00:55:04.820 Yeah, do you hypothesize that

NOTE Confidence: 0.728760331428571

00:55:04.820 --> 00:55:06.498 that's the that's the case?

NOTE Confidence: 0.909479199

00:55:08.670 --> 00:55:10.770 It depends, I guess on how much

NOTE Confidence: 0.909479199

00:55:10.770 --> 00:55:12.127 you are recoverable, right?

NOTE Confidence: 0.909479199

00:55:12.127 --> 00:55:14.869 I mean, I think that's probably  
NOTE Confidence: 0.909479199

00:55:14.869 --> 00:55:17.471 also very depends on how much  
NOTE Confidence: 0.909479199

00:55:17.471 --> 00:55:19.757 your brain is able to recover,  
NOTE Confidence: 0.909479199

00:55:19.760 --> 00:55:21.496 but there's definitely a  
NOTE Confidence: 0.909479199

00:55:21.496 --> 00:55:22.758 correlation, so if you.  
NOTE Confidence: 0.911187146

00:55:24.890 --> 00:55:27.438 Recover so we even saw that in  
NOTE Confidence: 0.911187146

00:55:27.438 --> 00:55:29.712 our little group. If they are,  
NOTE Confidence: 0.911187146

00:55:29.712 --> 00:55:31.682 they were definitely some participants  
NOTE Confidence: 0.911187146

00:55:31.682 --> 00:55:34.078 who didn't recover as much and with  
NOTE Confidence: 0.911187146

00:55:34.078 --> 00:55:36.749 with with CPAP and so those are the  
NOTE Confidence: 0.911187146

00:55:36.749 --> 00:55:39.402 ones that showed the least memory  
NOTE Confidence: 0.911187146

00:55:39.402 --> 00:55:42.360 improvement and the ones that had  
NOTE Confidence: 0.911187146

00:55:42.450 --> 00:55:45.480 more recovery had more improvement.  
NOTE Confidence: 0.911187146

00:55:45.480 --> 00:55:48.945 I think in general the ability to  
NOTE Confidence: 0.911187146

00:55:48.945 --> 00:55:51.687 recover might be lower as you get older,  
NOTE Confidence: 0.911187146

00:55:51.690 --> 00:55:53.365 and the question whether it

NOTE Confidence: 0.911187146

00:55:53.365 --> 00:55:55.040 makes a difference or not.

NOTE Confidence: 0.911187146

00:55:55.040 --> 00:55:57.320 I'm not sure, I don't know.

NOTE Confidence: 0.911187146

00:55:57.320 --> 00:55:58.690 It's a good question mark.

NOTE Confidence: 0.9134306

00:56:04.440 --> 00:56:06.365 Well, I think we have gone through

NOTE Confidence: 0.9134306

00:56:06.365 --> 00:56:07.878 all the questions in the chat,

NOTE Confidence: 0.9134306

00:56:07.880 --> 00:56:11.048 so unless there's any other burning

NOTE Confidence: 0.9134306

00:56:11.048 --> 00:56:14.135 questions, I think we all greatly

NOTE Confidence: 0.9134306

00:56:14.135 --> 00:56:16.752 appreciate a fantastic talk on dry.

NOTE Confidence: 0.9134306

00:56:16.752 --> 00:56:19.360 Not sure if you have anything else to add.

NOTE Confidence: 0.9134306

00:56:19.360 --> 00:56:20.837 This was great. Thank you so much.

NOTE Confidence: 0.9134306

00:56:20.840 --> 00:56:23.279 I mean I I think that my my only

NOTE Confidence: 0.9134306

00:56:23.279 --> 00:56:25.445 question was you know the largest

NOTE Confidence: 0.9134306

00:56:25.445 --> 00:56:27.265 randomized smoke with trial of

NOTE Confidence: 0.9134306

00:56:27.337 --> 00:56:29.257 new outcomes and sleep apnea.

NOTE Confidence: 0.9134306

00:56:29.260 --> 00:56:31.900 Apples showed no impact on.

NOTE Confidence: 0.9134306

00:56:31.900 --> 00:56:33.988 Neuro cognition, including memory,

NOTE Confidence: 0.9134306

00:56:33.988 --> 00:56:36.130 verbal and learning, and so.

NOTE Confidence: 0.9134306

00:56:36.130 --> 00:56:38.125 I was just wondering if maybe you

NOTE Confidence: 0.9134306

00:56:38.125 --> 00:56:40.189 could speak a little bit to the

NOTE Confidence: 0.9134306

00:56:40.189 --> 00:56:41.925 reasons why you think that might

NOTE Confidence: 0.9134306

00:56:41.925 --> 00:56:43.916 be the case and how we might.

NOTE Confidence: 0.9134306

00:56:43.916 --> 00:56:45.476 Re address that question with

NOTE Confidence: 0.9134306

00:56:45.476 --> 00:56:47.360 a better trial at some point.

NOTE Confidence: 0.68414566

00:56:47.850 --> 00:56:50.238 Yeah, that's I just want that's

NOTE Confidence: 0.68414566

00:56:50.238 --> 00:56:52.553 what I've met with the this.

NOTE Confidence: 0.68414566

00:56:52.553 --> 00:56:54.568 This streetlight effect I think

NOTE Confidence: 0.68414566

00:56:54.568 --> 00:56:57.049 the problem is the is twofold.

NOTE Confidence: 0.68414566

00:56:57.050 --> 00:56:59.390 One is the there's several trials,

NOTE Confidence: 0.68414566

00:56:59.390 --> 00:57:01.931 but I think in the apples where

NOTE Confidence: 0.68414566

00:57:01.931 --> 00:57:03.719 participants only wore it for

NOTE Confidence: 0.68414566

00:57:03.719 --> 00:57:05.585 three or four hours per night.

NOTE Confidence: 0.68414566

00:57:05.590 --> 00:57:08.918 So it might be the amount of time

NOTE Confidence: 0.68414566

00:57:08.918 --> 00:57:11.450 that people you know the compliance.

NOTE Confidence: 0.68414566

00:57:11.450 --> 00:57:15.130 We had a small group as you saw 15.

NOTE Confidence: 0.68414566

00:57:15.130 --> 00:57:17.970 16 in each group and we had a

NOTE Confidence: 0.68414566

00:57:17.970 --> 00:57:20.089 research assistant who was available.

NOTE Confidence: 0.68414566

00:57:20.090 --> 00:57:23.268 We had somebody who was a trained

NOTE Confidence: 0.68414566

00:57:23.268 --> 00:57:25.501 respiratory therapist in the past

NOTE Confidence: 0.68414566

00:57:25.501 --> 00:57:27.880 who gave them really, we had mass.

NOTE Confidence: 0.68414566

00:57:27.880 --> 00:57:30.256 I mean, we offered them the service that

NOTE Confidence: 0.68414566

00:57:30.256 --> 00:57:32.597 you could normally not offer in real life.

NOTE Confidence: 0.68414566

00:57:32.600 --> 00:57:33.610 So that was one part,

NOTE Confidence: 0.68414566

00:57:33.610 --> 00:57:36.234 but I think the more important one is

NOTE Confidence: 0.68414566

00:57:36.234 --> 00:57:39.170 the type of memory test that you use.

NOTE Confidence: 0.68414566

00:57:39.170 --> 00:57:41.510 So if you use the traditional

NOTE Confidence: 0.68414566

00:57:41.600 --> 00:57:43.310 neurocognitive tests,

NOTE Confidence: 0.68414566

00:57:43.310 --> 00:57:45.114 that neuropsychologists are using.  
NOTE Confidence: 0.68414566

00:57:45.114 --> 00:57:48.195 If you do one one time testing,  
NOTE Confidence: 0.68414566

00:57:48.195 --> 00:57:50.320 which is what Apple used,  
NOTE Confidence: 0.68414566

00:57:50.320 --> 00:57:53.160 you're not gonna see a lot of effect.  
NOTE Confidence: 0.68414566

00:57:53.160 --> 00:57:54.858 UM, this one time testing if  
NOTE Confidence: 0.68414566

00:57:54.858 --> 00:57:56.769 we do that with with Allah,  
NOTE Confidence: 0.68414566

00:57:56.770 --> 00:57:57.474 you know,  
NOTE Confidence: 0.68414566

00:57:57.474 --> 00:57:59.234 usually when patients are tested  
NOTE Confidence: 0.68414566

00:57:59.234 --> 00:58:01.181 or participants are tested in the  
NOTE Confidence: 0.68414566

00:58:01.181 --> 00:58:02.843 evening and they learn a test,  
NOTE Confidence: 0.68414566

00:58:02.850 --> 00:58:05.100 you don't see a big difference  
NOTE Confidence: 0.68414566

00:58:05.100 --> 00:58:06.600 during that training sessions,  
NOTE Confidence: 0.68414566

00:58:06.600 --> 00:58:09.743 which is similar to when you give  
NOTE Confidence: 0.68414566

00:58:09.743 --> 00:58:12.658 them the number of backwards or.  
NOTE Confidence: 0.68414566

00:58:12.660 --> 00:58:14.949 You know any of the other traditional?  
NOTE Confidence: 0.890861987777778

00:58:17.610 --> 00:58:18.428 Neurocognitive tests,

NOTE Confidence: 0.890861987777778  
00:58:18.428 --> 00:58:21.700 but it's only when you test them a  
NOTE Confidence: 0.890861987777778  
00:58:21.780 --> 00:58:24.556 second time over over a night of sleep  
NOTE Confidence: 0.890861987777778  
00:58:24.560 --> 00:58:26.622 that you really see and. And really,  
NOTE Confidence: 0.890861987777778  
00:58:26.622 --> 00:58:28.750 I mean I stopped at one point because,  
NOTE Confidence: 0.890861987777778  
00:58:28.750 --> 00:58:31.963 you know I had a grand and I did  
NOTE Confidence: 0.890861987777778  
00:58:31.963 --> 00:58:33.559 emotional procedural. You know,  
NOTE Confidence: 0.890861987777778  
00:58:33.559 --> 00:58:36.954 we did various types of memories and also  
NOTE Confidence: 0.890861987777778  
00:58:36.954 --> 00:58:39.330 patients were impaired on all of them.  
NOTE Confidence: 0.890861987777778  
00:58:39.330 --> 00:58:40.176 Whatever we tested.  
NOTE Confidence: 0.890861987777778  
00:58:40.176 --> 00:58:42.570 So at some point you're just going to say,  
NOTE Confidence: 0.890861987777778  
00:58:42.570 --> 00:58:45.306 OK, I don't need to do this anymore.  
NOTE Confidence: 0.890861987777778  
00:58:45.310 --> 00:58:46.576 This, you know, it doesn't make.  
NOTE Confidence: 0.890861987777778  
00:58:46.580 --> 00:58:48.360 Yeah I should more testing.  
NOTE Confidence: 0.890861987777778  
00:58:48.360 --> 00:58:53.050 I think that. So using the proper test,  
NOTE Confidence: 0.890861987777778  
00:58:53.050 --> 00:58:54.988 now that it's still a question,  
NOTE Confidence: 0.890861987777778

00:58:54.990 --> 00:58:56.510 are they also reflective?  
NOTE Confidence: 0.890861987777778

00:58:56.510 --> 00:58:59.270 If you perform poorly on these tests?  
NOTE Confidence: 0.890861987777778

00:58:59.270 --> 00:59:01.946 Does that mean that that also  
NOTE Confidence: 0.890861987777778

00:59:01.946 --> 00:59:04.710 shows a risk for dementia?  
NOTE Confidence: 0.890861987777778

00:59:04.710 --> 00:59:06.747 Or you know how does this you  
NOTE Confidence: 0.890861987777778

00:59:06.747 --> 00:59:08.590 know there's still a missing link?  
NOTE Confidence: 0.890861987777778

00:59:08.590 --> 00:59:11.260 I think with.  
NOTE Confidence: 0.890861987777778

00:59:11.260 --> 00:59:13.766 But I think in in the immediate  
NOTE Confidence: 0.890861987777778

00:59:13.766 --> 00:59:15.689 improvement and and looking at,  
NOTE Confidence: 0.890861987777778

00:59:15.690 --> 00:59:17.746 I think people need to use different tests.  
NOTE Confidence: 0.940429501666667

00:59:22.220 --> 00:59:23.978 Alright, well thank you so much,  
NOTE Confidence: 0.940429501666667

00:59:23.980 --> 00:59:26.150 I appreciate it and we  
NOTE Confidence: 0.940429501666667

00:59:26.150 --> 00:59:28.320 will see you next month.  
NOTE Confidence: 0.940429501666667

00:59:28.320 --> 00:59:29.732 Thank you everybody, that's good.  
NOTE Confidence: 0.940429501666667

00:59:29.732 --> 00:59:31.489 Thanks for having me bye bye.